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ABSTRACT

Reported in this document are the evaluation results of five model teacher inservice language arts/reading projects geographically dispersed and operationally unique. Contents include an introduction describing the joint efforts of the Bureau of Educational Personnel Development and the National Council of Teachers of English in carrying out the projects, "Design and Evaluation Strategy," "Report on Site Visits," "Summary of Project Directors' Report," "Results of Teacher Practices and Attitude Survey," "Results of Study of Pupil Test Performance," and "Summary and Conclusions." Concluding the document are several appendixes on the evaluation design, data forms, and performance results obtained from the projects (Project DELTA--University of California at Berkeley and Berkeley Public Schools; Inservice Program in Reading/Language Arts--Ohio State University and Columbus Public Schools; Project PIRLT--Temple University and Philadelphia Schools; Seawell Elementary School--University of North Carolina and Learning Institute of North Carolina; and Portland State University and Portland City Schools, Oregon). (RB)

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Education Professional Development Act

REPORT ON

NATIONAL COORDINATED EVALUATION OF

FIVE MODELS FOR LANGUAGE ARTS/READING CENTERS

Berkeley - University of California
Chapel Hill - Learning Institute of North Carolina
Columbus - Ohio State University
Philadelphia - Temple University
Portland - Portland State University

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CS 201 309

PREFACE

To undertake the evaluation of five model language arts/ reading projects geographically dispersed and operationally unique provides a challenge to any group of evaluators. There had to be enough freedom from constraints that each center could develop into its own personality -- yet some uniformity was needed to determine if the expenditure of one million dollars was effective.

Needless to say, opportunities for failure in such an undertaking were prevalent. Many aspects of evaluation needed to be coordinated; yet opportunities for coordination were rare. However, this report is the results of our labor. From it we have learned much and have planned many ways to do a better job if the opportunity again arises.

Overall, we feel that much was accomplished, that students and teachers learned a great deal. We are happy that the year and the opportunity existed; we are unhappy that the five projects were not given longer life, for one school year of operation is hardly enough to work out the kinks of such complex programs.

We take full responsibility for what we have written without bragging or apologizing. We thank the many who have assisted us in this task, especially the five project directors and their staffs, Dr. Robert Hogan and Dr. Doris Gunderson.

William G. Katzenmeyer
Hugh I. Peck
Robert A. Pitillo
Richard S. Ray
Durham, North Carolina
November, 1971

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CHAPTER I

INTRODUCTION

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In January 1970, representatives of the Bureau of Educational Personnel Development (BEPD) approached Robert Hogan, Executive Secretary, and other representatives of the National Council of Teachers of English (NCTE) to determine if the organization would cooperate in a joint endeavor with BEPD to plan five language arts/reading programs for inservice training.

NCTE agreed, and the general goals of the project were established. Those objectives were as follows:

1. The projects were to develop inservice training programs, non-traditional in nature, which could be transferred, in whole or in part, to other institutions interested in upgrading training programs in language arts/reading.
2. The projects in their training programs were to emphasize the language base of reading, rather than stressing reading as an isolated skill area.
3. The projects were to establish a close working relationship between a public school system and a university, so that the school system could benefit from the expertise of university personnel and to enable university teacher-trainers to more readily adopt new training methodology developed as a result of the project.

4. The projects were to emphasize training of teachers and administrators in the primary grades.
5. The projects were to place emphasis on the training needs of teachers and administrators in inner city schools.

BEPD and NCTE did not offer a general competition on a national basis for receipt of a project grant. Rather, institutions were selected for funding which had demonstrated in the past some skill in developing innovative approaches to inservice training for teachers in language arts and reading. That, plus the need for geographic distribution and the desire for some diversity, were the controlling factors in selection of the five project sites.

By mid-February, 1970, the sites had been selected. The sites, institutional affiliation and the major project administrators at that time were:

Berkeley, California - University of California - Dr. Robert Roddell

Columbus, Ohio - Ohio State University - Dr. Charlotte Huck

Chapel Hill, North Carolina - The Learning Institute of North Carolina - Mrs. Helen Wolff

Philadelphia, Pennsylvania - Temple University - Dr. Howard Blake

Portland, Oregon - Portland State University - Dr. William Jenkins

As projects developed two changes were made regarding project directors, Dr. Colin Dunkeld became director of the Portland project and Dr. Paul Pritchard became director of the Chapel Hill project and principal of Seawell School. With the exception of the Chapel Hill, North Carolina project, each of the projects was to have a direct affiliation with a university through the project director, who was in a professional position at one of the named universities. The N.C. project was to be administered by the Learning Institute of North Carolina, a non-profit research and development group in that state. Consultation and planning relationships were to be established with a number of teacher training institutions.

In some instances, the institution was to be the funding agent; in others, the public school system. NCTE was to bear the major portion of responsibility for planning the project, arranging meetings of project representatives with BEPD and NCTE officials, for evaluation of the national project, and for dissemination of information about the project. The involvement of NCTE demonstrated one of the strategies of BEPD to achieve more rapid improvement in teacher training; that is, to utilize organizations of education professionals to stimulate innovation and reform in teacher training in order to upgrade the quality of educational offerings for children.

NCTE called the first meeting of project representatives for March during the annual meeting of the American Education Research Association in Minneapolis. At that time the general guidelines for the project were discussed and adapted, funding arrangements were revealed, and project evaluation possibilities were discussed.

It was decided that in view of the potential impact of this project on national legislation, in particular the Right to Read program and the continuity of training funds through the Office of Education, a national evaluation of the five projects was necessary as well as internal project evaluations. Areas needing study for evaluative purposes were identified as follows:

1) The impact of the training program on teachers competing in teaching language arts and reading;

2) Changes in teacher attitudes as they relate to language arts instruction as a result of the training programs;

3) Observable changes in student language arts/reading as a result of the training programs; and

4) The cost/accountability of the projects in regard to their impact on students, teachers, administration, school systems and institutions.

A second meeting of project representatives was to be held in Anaheim, California, during the annual meeting of the International Reading Association in early May, 1970.

In the interim between the March and May meetings, NCTE asked representatives of the Learning Institute of North Carolina to design an evaluation plan for the five projects and to be prepared to discuss this plan in detail with project directors at the May meeting. Subsequently, Specialized Educational Consultant Services (SPECS) of Durham, North Carolina, developed the evaluation plan and entered into agreements with NCTE to conduct the national evaluation. LINC agreed to contribute its evaluation and dissemination capabilities to the degree that they were desired and needed. The SPECS team was composed of the following persons, whose efforts were supplemented by data management specialists and clerical personnel:

Dr. William Katzenmeyer - Duke University

Dr. Hugh Peck - LINC

Dr. Robert Pitillo - Duke University

Dr. Richard Ray - LINC

At the May meeting the specifics of the evaluation plan were discussed and project directors were informed of data which should be gathered. Plans for reporting this data to the evaluation team were made.

Appendix A describes the SPECS evaluation plan agreed to by NCTE and BEPD.

The national coordinated effort of NCTE and USOE was one of the first times that the U. S. Office of Education had cooperated with a national professional organization to implement specific programs that related to the organization's discipline.

CHAPTER II

DESIGN AND EVALUATION STRATEGY

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DESIGN AND EVALUATION STRATEGY

It was the desire of both the National Council of Teachers of English and the U. S. Office of Education that the five projects under consideration be evaluated at two levels. First, each of the five projects should set aside funds for a local or project evaluation. Therefore, each project would be carefully evaluated as an entity in itself. Second, since each of the five was a part of a national program, some type of evaluation should be planned that would consider the value of these five basically different models in an overall way. Further, it was agreed that all projects would develop a basic data base and the national coordinated evaluation would use as much as possible the same data and analyze it across projects.

The work of the national coordinated evaluation team was delineated as program evaluation, as opposed to research. Basically, the adoption of an evaluation model for this purpose negated the use of any control groups. It was agreed from the initial meeting by all represented (USOE, NCTE and project directors) that for the purposes of the national evaluation control group would not be involved. If local evaluators desired such, they were not forbidden, however, such data would not be reported to the coordinated evaluation team.

Five major areas were selected as focuses for the national coordinated evaluation. Each of these might be spotlighted by use of a question.

1. What effect did the centers have on pupil performance?
2. What effect did the centers have on teacher attitudes and practices in reading and language arts?
3. What individual programs or activities can be isolated and replicated at centers for broader national application?
4. What model can be established that will provide opportunities for changing teacher training practices and reaching more teachers?
5. What efforts of the centers are effectively reaching more teachers?

To investigate the first of the five objective plans were made to collect pre- and post-test data on all children directly a part of the project schools. The national coordinated evaluation team provided a Student Data Card Format (see Appendix B) which we hoped would provide some uniformity to data collection procedure. It was the goal, however, that the program of the center should come first and the evaluation data collection should not determine program content. We had hoped that conclusions regarding student performance could be made based on data collected.

Two major efforts were undertaken to look at the "teacher variable." A Teacher Data Card Format was suggested by the national coordinated evaluation team (see Appendix B) and a questionnaire was prepared to survey teacher practices and attitudes. The SPECS Teacher Practices and Attitudes Survey is included in Appendix C.

In summary, in order to determine if participation in the project had an effect on teacher attitude toward or practices in the language arts/reading areas, a Teacher Practices and Attitudes Survey was administered in a pre-test/post-test design. Results of these studies are presented in Chapter V.

The same evaluation strategy was used to study the effect of the projects on students' performance. It should be remembered that each project adopted and administered its own testing program, thus, there was no uniform program throughout. The national coordinated evaluation, therefore, attempted to use the existing data to study performance across centers.

To determine if other objectives were met the evaluation team relied heavily on site visits, both formal and in connection with other meetings, on conversation with the various project staff, and on formal reports from the project directors to the evaluation team. Each project site was visited by at least two members of the evaluation team. One team member visited all five sites at least once and was in most project schools. To many, site visitation may seem among the least objective and least desirable methods of evaluation. If they are used as an only technique, we would agree. When site visits are combined with other information they make the total evaluation more real and at least allow the evaluation team to put the various aspects of the evaluation into a similar framework.

Project directors were asked to report to the evaluation team by following a specific set of questions (see Appendix D) as well as to respond to certain open-end questions. These reports were amazingly candid and useful in preparing this document. The evaluation team received complete cooperation from project staff and great deal of trust in our work as we searched for effective, but non-interferring evaluation methods.

One phase of the evaluation really never became fruitful. We had hoped to provide a good deal of data regarding cost analysis and effectiveness. For many reasons this never was completed. First, each project was on a different fiscal year: one opening in April, 1970 (the first to open) and the last one closing down its fiscal year in December, 1971. Each project had a specific fiscal officer, to whom they were responsible -- each officer had a different system of accounting and cross comparisons were again meaningless. Finally, project directors were not Planning, Programming and Budgeting Systems experts and were rightly much more interested in program content than money matters.

In evaluation design, strategy, implementation and outcome there are fundamental changes that must be made when original plans do not pan out and for any number of reasons "best laid plans" oft go astray. For example, we had planned on a pre/post-assessment of pupil performance in all five centers. One center, because of the schedule of the local testing program, was unable to comply and used a post-test-only approach. We have appended to this report the original evaluation strategy. Parts of it were carried to implementation. Parts fell to the wayside.

Among the many lessons learned from the implementation of a coordinated evaluation for diverse projects (geographically and programmatically) one major lesson seems clear. Close liaison is necessary, some uniform agreement on instrumentation, at least a minimum agreed upon amount, must be implemented. If both local and coordinated evaluations are planned, all these evaluators must meet early and often to bring such a project to a fruitful end.

The struggle for balance between the individual program and the coordinated evaluation is not an easy one, but it should be hammered out early under the watchful eyes of the funding agencies.

CHAPTER III

REPORT ON SITE VISITS

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This chapter reports the results of the five site visits made by members of the SPECS evaluation team. Reports were written by various members of the evaluation team, and this chapter reports those documents directly. Since each project is unique and since all staff members did not visit all centers, the visitation reports do not follow a uniform format. Further, conclusion based on the site visits will be made on a site-by-site basis, rather than across sites.

Site-Visit Report on:	Project DELTA - Berkeley, California
	Washington Elementary School
Dates of visit:	April 27 and 28, 1971
	May 5 and 6, 1971
Personnel on Visit:	Dr. Richard S. Ray Dr. Hugh I. Peck
	Dr. Robert A. Pitillo Dr. Hugh I. Peck

Project DELTA was a cooperative program in many ways. Sponsored by a joint effort of the U. S. Office of Education and the National Council of Teachers of English, it was cooperatively operated between the University of California/Berkeley and Berkeley Public Schools,specifically Washington Elementary School. DELTA constituted the 600 students in Washington School, the school staff of 24 personnel plus three full-time, five part-time and one project director; the later three categories were financed from DELTA funds. DELTA was housed in Washington Elementary School and focused its major attention on the faculty and students of that school.

DELTA organized itself in a functional way, choosing to call each of its major efforts strands. These strands involved five carefully focused program components, each chosen for its relationship to a complete language arts/reading program. The five strands were:

Oral and Written Language Development

Literature and Self-Concept

Comprehension (Critical Thinking and Questioning)

Decoding (Early Word Attack Instruction)

Parent Participation

Although it was never seen as a strand, the development of new and innovative measures in the language arts/reading areas was a major focus and one of the major strengths of Project DELTA.

One member of the DELTA staff took the responsibility for developing each of the five strands. In many ways each strand became the private concern of that staff member. Teachers within the Washington School faculty became strand members and rotation systems were worked out to assure that faculty members were involved in a number of strands. Each strand working cooperatively with the DELTA staff member and their teacher group set objectives for their strand meetings. Usually these objectives were stated in written form and progress toward these objectives was charted through minutes of strand meetings.

During the site visit the evaluation team attended a meeting of the parent involvement strand, therefore, having the opportunity to actually see the strand in operation and observe the interaction between DELTA staff, members of Washington School faculty and local parent representatives. The visitation team had opportunities to meet with each strand leader and in some cases members of the Washington School faculty who were strand participants. During these meetings, goals of each strand were explained and activities that each strand undertook were illustrated. Also, during these meetings we were able to meet and gain a broader knowledge of the research aspects of Project DELTA.

The literature and self-concept strand had as its focus the use of stories, poems or other literary works as a starting point in the improvement of self-concept. Children used characters in stories to develop ideas about how people feel about themselves and others. These people became models or identifiers for the children to use in the process of building a more positive self-concept. Further, these stories provided a take-off point that students could use in writing their own stories and reflecting through these stories their self-assessments. In the opinion of the visiting team, this strand had developed further the concept of using literature, modern and classic, to assist children in understanding themselves and their environment than any similar program of which we were aware.

Decoding skills are those necessary for the beginning student to learn word attack abilities. The DELTA decoding strand emphasized both decoding strategies and decoding for content; specifically they taught the structural elements of the words and the derivation of the content of the word from an understanding of the elements. The approach used to develop these decoding skills, though rather elaborate, seemed to be operating well, and teachers who had been involved in the strand training seemed to be effectively applying the decoding plan.

Perhaps the leader or wrap-up strand was that of oral and written expression. The rationale seemed to be that if language arts and reading are effectively taught, both the oral and written expression of the student will be positively changed. Thus, this strand not only depended in large part on the effectiveness of other strands, but built heavily on the others to expand the language horizons of the students. The Oral Language Inventory, a part of this strand, indicated six specific activities that made up the strand: quality of thought, organization of expression, quality and control of language, fluency of language, personal response to language and technical skills in oral expression. There seemed to be a great deal of emphasis on non-standard dialects and how they were a part of the total life of the child.

The DELTA comprehension strand should not be thought of in the routine sense of the meaning applied to comprehension, especially a subscale of a test called reading "comprehension." DELTA's use of the term is applied to an entire taxonomy for classifying the interaction in classroom discussion and reaction. In many ways the term applies to the teachers' own comprehension of themselves in action. DELTA has developed a unique taxonomy for the analysis of classroom interaction. The taxonomy looks at four aspects of the interaction: (1) who was speaking (teacher or child), (2) what type of verbalization went on (comment, question or response), (3) what level of comprehension was involved in the interaction (factual, interpretive or applicative),and finally, (4) what role did the teacher play or what strategy did he or she follow (focusing, ignoring, controlling, receiving, clarifying, extending or raising). As the site visitation team viewed this strand, we felt that the process of the taxonomy was operating more effectively than its purpose. That is, the teacher and strand leader seemed unclear as to some goal for the taxonomy -- some reason for its use -- somewhere such action should take the teacher. If such questions were made clearer to the users, the taxonomy would increase in value.

As an overview of our visit to Project DELTA, we would like to point out the following areas for improvement, should the project continue or should others wish to adopt the DELTA model.

First, the DELTA strand needed a great deal of weaving together. We were impressed with the strand approach, however, much could have been done to bring together the five strands into a total language arts/reading program.

Second, the decision makers within DELTA were in hopes that a second year would provide them with their outreach opportunity -- this was expected by all. As it turned out, there was no second year and there was a good deal of hurried planning to see that there would be reasonable residual effect of the project. If there was a next time around, we cannot plan for that second year.

Finally, it seemed to the visitation team that DELTA never became an integral part of the local school. Perhaps earlier in the history of the program more groundwork could be laid to prepare the school, the university and the community for the institution of such a project.

We hasten to add that we saw many positive things about the project. Of all the projects involved, DELTA had a greater research focus than the others, due, we are sure, to the leadership of the project director. Evaluation and the development of new instruments had a greater focus and these were well planned and developed ideas. DELTA, it seems to us, really tackled the guts of language arts/ reading problems, attempting to delineate the problems into some reasonable parts and find innovative ways to search for usable and replicable solutions.

Site Visit Report on: Seawell Elementary School
Chapel Hill, North Carolina

Evaluators on Visit: Dr. Hugh I. Peck
Dr. Richard S. Ray

Seawell Elementary School is located in Chapel Hill, North Carolina, home of the University of North Carolina. It opened in the fall of 1970 with a "pod" design for multi-aged/team teaching under the direction of Dr. Paul Pritchard. At its opening it was one of the NCTE/USOE model training projects for language arts and reading. Though the architecture of the school was planned separately from the NCTE/USOE project, the two were compatible and in many ways seemed made for each other. Teachers employed at Seawell had volunteered in the spring of 1970 without realizing that Seawell would become a major training component.

Seawell School and the Learning Institute of North Carolina teamed with the NCTE/USOE groups to form a training or outreach school that would provide through planned rotation training for teachers in innovative techniques for language arts and reading instruction. Satellite schools from nearby school districts were selected to cooperate in the training sequence. There were eight satellite schools located in seven school districts in North Carolina.

A sequence of events was outlined as the training component of Seawell. Administrators of participating school units made a site visit to orient them to the school, its philosophy, program and facilities. Before teachers visited Seawell, a field services person from LINC/Seawell would visit the school to assist in orientation and planning for the satellite school visits to Seawell.

Step three was a four-day visit by teachers from the satellite schools to the Seawell School. Six weeks after the visit to Seawell, the field services person would again visit the satellite school as follow up and to provide whatever services he could in assisting the school to implement as much of the Seawell program as the individual teacher wanted to undertake.

Two types of evaluation were planned: 1) a series of instruments to determine the effect that being involved in the project had on the attitudes and practices of participating teachers, and 2) an assessment of the test performance of Seawell students (1-6) on a pre/post design.

Project evaluators made an on-site visit during the visitation period to one of the satellite schools. Further, project evaluators were able to talk with members of the Seawell staff from time to time during the year. We felt the plan for inservice education was well organized and had a good chance of being the most effective school in the "outreach" or "multipliers" effect of the language arts/reading models. On the whole, teachers participating from satellite schools felt the experience was worthwhile and were returning with ideas for implementation in their classrooms.

We would point out the following as "food for thought" as others look toward the adoption and adaptation of this model.

Teachers who are the "on staff" group have dual responsibilities teaching their children and training and having satellite teachers. These will in many cases conflict, especially if the staff teacher sees her job as keeping the visiting teacher "busy." The most effective approach seemed to be where "pod" teachers continued their teaching and learning process, and visiting teachers entered into the serving of what was happening and worked directly with the children.

Visitation to Seawell was divided between class time for visiting teachers, usually directed by LINC personnel, afternoon sessions on creative teaching, and in pod time for observation and participation. However, some schools that were visiting had been operating similar programs for longer periods of time. Perhaps more careful selection of satellite schools is called for.

Teachers in Seawell need time and release time. They must plan for children and for other teachers. They should know what is expected of them and be compensated for the additional responsibility they accept. It will take a strong and dedicated group of teachers and administrators to operate a school simultaneously with an inservice training program. The writer visited all five of the NCTE/USOE language arts/reading models. This model was providing more outreach, doing more inservice training and reaching a greater number of practicing teachers than any of the others.

Site-Visit Report on: In-Service Program in Reading/Language Arts, Columbus, Ohio

Kent and Indianola Schools

Date of Visit: June 3, 1971

Personnel on Visit:
Dr. William G. Katzenmeyer
Dr. Hugh I. Peck
Dr. Robert A. Pitillo
Dr. Richard S. Ray

The four members of the evaluation team visited each of the two schools, Kent and Indianola, involved in the Ohio State University/Columbus Public Schools Language Arts Project on June 3, 1971. In addition, the project director and teaching associates conducted a briefing for the evaluation team at the end of the day.

The purpose of the visit by the evaluation team was to see the program in action and to get the "feel" of what was taking place. The evaluation team made no attempt to assess the achievement of students based on the visit.

One of the principle objectives of the new approach was to get the program of instruction on an individual basis with performance level instruction. One of the vehicles employed to effect these objectives was the open classroom/interest-center approach.

Members of the evaluation team visited each of the classrooms in both schools. It was obvious that instruction was interest center based. Youngsters were active in classrooms working in reading groups, arithmetic groups, etc., without teacher domination. One striking example of the interest center approach being applied as a vehicle for skills development was the use of the hot-plates for preparation of food. Children had prepared everything from fudge, which did not "turn out," to potato salad, which was good. Math concepts and reading skills were essential to the success of the cooking projects. Thus, each youngster was motivated to read the recipe and compute the necessary ingredients.

The visiting team had the opportunity to talk informally with a number of teachers. Their general reaction to the project was supportive. Many teachers, some of whom admitted strong misgivings about the project at the outset, stated that they could not return to the traditional approach to teaching. In addition, teachers reported that youngsters were happy and that the traditional "late year" discipline problems were almost non-existent.

We were impressed by the explanation of one teacher who told of going immediately to an open classroom situation following the summer in-service training. Then, finding that she could not handle the new situation, she returned to a traditional environment -- only to discover that she really preferred to be back in an open environment. As a result, she began a gradual transition to interest centers and open environments. At the time of our visit in the spring, her classrooms were operating as open environments.

The project directors had reported to the evaluation team that one faculty had voted to disassociate itself from the project for the year 1971-72. A combination of events and circumstances led to this decision. First, one of the principals appeared to be less than enthusiastic about the program, and, second, misunderstandings resulted from contact with the university people. These misunderstandings appeared to have resulted from too much pressure for immediate change as well as the old communication problem. In spite of the "problem" changes were taking place, teachers were committed to the new approach, and the program was entrenched.

The briefing session with university people was well planned information and demonstrated a high level of competence and leadership. The teaching associates knew their role, displayed insight into the problems and appeared to be articulate people who will spread the program to other areas of the country.

In summary, the evaluation team was favorably impressed with the program. In classrooms visited, teachers were using the interest center, child-centered approach to instruction. They were working closely with teacher associates and the concept of the open classroom appeared firmly entrenched. The reading program was relevant, functional, and the children were enthusiastic and happy.

Site-Visit Report on:	Project PIRLT - Philadelphia, Pennsylvania Carver - Washington Schools
Dates of Visit:	March, 1971
Personnel on Visit:	Dr. William G. Katzenmeyer Dr. Robert A. Pittillo, Jr.

The evaluation team visited the two schools in the Philadelphia project for the purpose of viewing the classrooms, talking to teachers and project staff, and getting a "feel" for the program in action. During the two days the team spent in Philadelphia most of the classrooms involved in the project were observed. The team made no attempt to assess the achievement of students; however, special attention was given to instructional strategies and teacher involvement, commitment and reaction to the project.

Before entering classrooms the team was briefed by project staff and the school principals. Examples of materials developed and progress to date were discussed. One member of the project staff spent a good portion of the first morning acquainting the team with objectives by teacher and project accomplishments.

A teacher strike in Philadelphia which occurred early in the school year coupled with a high sensitivity of the staff to school-community faculty relationship resulted in a very cautious approach to the implementation of the program.

During the first briefing of the team it became obvious that the project staff was knowledgeable about the program objectives and each teacher involved. The University people were working very closely with the administration and faculty of each school.

They were able to assess each classroom and teacher involved and an excellent relationship between university people and school staff was evident.

Creative materials had been prepared to acquaint parents with the program. Moreover, teachers were being assisted with acquisition and development of instructional materials.

Although it was difficult to identify the major changes taking place in classroom organizations it was apparent that teachers were moving to a child centered approach. Some classrooms had moved in the direction of interest centers, individual projects, and experience centered activities. Parent aides and student teachers were working with participating teachers.

The evaluation team had the opportunity to talk at length with some of the participating teachers and to talk briefly with others. Teacher reaction to the project was very supportive. Project teachers stated that the program was providing a vehicle through which they could operationalize effective diagnostic techniques and productive teaching strategies. Participating teachers were enthusiastic about the future of the program, and they expressed the feeling that they were working together with strong support from university people and the principals.

An interview with the principals revealed their support of the program and their desire to continue to work with the university staff. Continuing inservice training sessions were effective in that teachers could discuss real classroom problems with the university staff. The principals and teachers reported that the project had a salutary effect on moral generating confidence and enthusiasm on the part of the participating teachers.

In summary, classrooms were made attractive and alive by a variety of materials and activities. University personnel including graduate students, undergraduates, and professors were working as a team with the participating teachers and the principals. Progress was not as rapid as the project directors had planned; however, many difficulties were being overcome by time and determination. Teachers and the principals were confident that the program was sound and that they were making deliberate progress toward the goals.

Site-Visit Report on: Portland State University/Portland City Schools

Date of Visit: April 29, 1971

Personnel on Visit: Dr. Hugh I. Peck
Dr. Richard S. Ray

The Portland Project is a cooperative effort between Portland State University and the Portland City Schools. A number of teachers in Portland City Schools enrolled in this cooperative project in the language arts/reading area. Enrollment in the project meant that the enrollee would attend on-campus classes one day each week as well as receive support services from members of the project staff. This support was provided by two members of the staff who acted as "supervisors" for the project.

During the site visit, project participants were on campus at Portland State University and the team spent the day with the teachers. Because it was an on-campus day, we were unable to visit the project schools. The morning of the site visit was spent at a lecture by Dr. Jenkins on the role of the library in the elementary school. Also, there was a meeting of the parents participating in the project. This meeting was held in an adjacent room and one member of the visitation team sat with the parents group.

Members of the visitation team spent lunch with three teacher participants and had an oppportunity for informal conversations with them. One part of the visit was spent at the Northwest Regional Education Laboratory discussing the evaluation strategy. One unique aspects of the formative evaluation was the inclusion in the group of participants of a participant-observer who sat in with the group as a member and as a critique observer. The function of this person was to provide feedback to the staff personnel who has operated the program for that day.

The parent participation section of this project was directed by a dynamic leader who was able to establish very active rapport with parents who were acting as aides and volunteers to other teachers throughout the system some of whom were in the project. As an observer the author was pleased with the manner in which the parent section operated and with the valid way in which parents took part in the program. Certainly this phase would need to be considered one of the highlights of our visit and one of the best examples of parent involvement in school functioning that we have seen.

Reaction of teachers to the project was, as would be expected, varied. While some teachers saw this as opportunity to gain some college credits most teachers felt that the project definately had lots of innovative techniques to offer them and that they would take advantage of these opportunities to improve their instructional program. There was a good deal of discussion concerning ways in which the supervisory personnel were using their time. Some teachers want more opportunity to work with these personnel, other stated that they felt the supervisory personnel needed to be used only when teachers were having difficulty in their instructional program.

The afternoon demonstration conducted by the project staff was one of the most innovative demonstrations on the use of dramatics or acting out stories to teach communications concepts that we had ever witnessed. Using the story of Peter Cottontail as a base, participants were instructed by the demonstration in immeasurable ways in which dramatic plays could be used to teach both concepts and skills. Following the demonstration, an audio-visual demonstration on rabbits was presented. The film and the story fused into a major demonstration of the use of visual and dramatic effects to implement creative learning. It was easy to see how such approaches to teaching could really "turn-on" young students to education.

As we review our site visitation to Portland, we regret that we were unable to visit schools participating in the program, but realize we could only get a scattered picture of the various aspects of the project. As is true with any project, Portland seemed to have some difficulty becoming an integral part of the school unit rather than an outside project. However, project decision makers were aware of this and steps were being taken to change this. The project was faced with the problem of how to select participants or if there would be opportunity to make such choices.

We felt the major strengths of the project were the on-campus section and the innovative types of instruction that were provided there. Certainly, the project staff represented a team of dedicated and able educators. The two coordinating supervisors were extremely able and doing a very creditable job and helping teachers do a better job. Finally, we should mention the role that the project director played and the ability and enthusiasm that he had for the job he was doing. The Dean of the School of Education at Portland State University was the first project director and has given the project his unqualified support.

We cannot close without stating again that we felt the parent involvement section was a real strength. As of this point in time, Portland is the only project that is assured of continued funding and we are pleased that at least this one will continue.

A Closing Statement Regarding Site Visits

We have stated earlier that we believed the site visit technique is of limited value. However, we further feel that without such site visits we would not tie together any reasonable type of evaluation. There is no substitute for being on-site at a project in order to get a veritable feel for the projects. We feel fortunate to have had the opportunity to visit each project. We need to repeat that all projects showed strengths, that each project developed a personality that in many ways reflected the personality of its director and staff. No project ever reaches utopian proportions or operates without problems. The team of project directors was one of the most capable, varied and yet uniform group with which we have worked. They were varied in their approaches to the language arts/reading field; they were uniform in their dedication to providing better teaching in our schools.

CHAPTER IV

SUMMARY OF PROJECT DIRECTORS' REPORTS

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When the project directors met in Berkeley on May 3, 1971, it was decided that each director would file a report to be included in the coordinated evaluation. A format developed by the project directors was prepared by SPECS and mailed to each center. Three of the directors completed the report. This report was designed to identify the impact of the project on: (1) the university community; (2) the public education community (teachers, administrators, supervisors from non-participating classroom schools and school systems); and (3) the parent community of the participating schools. The project directors' questionnaire is presented in Appendix D.

1. Project Director's Report for the Ohio State University/Columbus Public Schools Project -- Dr. Charlotte S. Huck, Project Director.

The university community was involved on various levels. Nine professors filled the following project positions:

2 - Directors
1 - Supervisor of undergraduate student aides
1 - Evaluator and consultant
4 - Consultants (taught one or more seminar sessions)
1 - Adjunct professor (worked half-time with the project as a team coordinator in one of the schools.

Also participating were 8 graduate students, 7 of whom assisted in planning and teaching the weekly seminars, working in direct contact with teachers in the schools. The eighth graduate student served as administrative assistants on a part-time assignment. Working as teachers' aides, 68 undergraduate students assisted for periods of two full days per week for one school quarter.

The number, positions and geographic areas of visitors to the OSU/CPS Project schools are presented in Table 1. Two hundred and four visitors to the project were logged. They represented a variety of professional activities, both within and outside the field of education, and were predominantly from the state of Ohio.

The number of formal presentations of the OSU/CPS Language Arts Project to various educational groups is listed in Table 2. Seven hundred and eighty-three presentations were recorded to interested persons, primarily public school personnel.

Table 3 lists the informal presentations of the OSU/CPS Language Arts Project to non-participants by the project staff members.

The percentages of visits by project personnel of Kent and Indianola Schools to other schools in the Columbus area are presented in Table 4.

Percentages of project personnel who took one or more professional trips funded by the project during the school year are shown in Table 5. In Table 6 there is a listing of the trips made by project personnel to participate in NCTE project conference and professional meetings held in various cities.

In addition to the formal presentations of Tables 1-6, the project directors were invited to discuss informal evidence of multiplier effect. The following section titled "Other Evidence of the'Multiplier' Effect" is a narrative representing the response of the OSU/CPS project director to this invitation.

TABLE 1

NUMBER OF VISITS TO THE OHIO STATE UNIVERSITY/ COLUMBUS PUBLIC SCHOOLS PROJECT SCHOOLS

	Geographical Area Represented						
Position of Visitors	Columbus Public Schools	Columbus Area		Ohio	Out of State	Unknown	Total
School Administrators	13	7		0	1	2	23
Teachers	31	19		11	0	0	61
University Personnel		OSU	Other				
a) Professors & Instructors		3	0	4	2		9
b) Unknown		1		1			2
College Students							
a) Undergraduates				10			10
b) Graduate		23					23
c) Rank unknown		8		4			12
Executives in Professional Organizations				2			2
U.S. Office of Education					2		2
Member School Advisory Board		2					2
Parent							
a) Study Group	5						5
b) From Other School	13						13
c) Potential School Patrons	9						9
d) General	24					2	26
Reporter - T.V.		1					1
Position Unknown		2				2	4
TOTAL	95	66		32	5	6	204

TABLE 2

FORMAL PRESENTATIONS OF THE OSU/CPS LANGUAGE ARTS PROJECT TO OTHERS

Group	Approx. Number
Columbus Board of Education	11
Laura Zirbes' Conference, OSU	50
Columbus Public Schools Reading Teachers	75
North End Organization for School Improvement	35
Curriculum Class, Capital University, Columbus, Ohio	50
Curriculum Committee - Columbus Board of Education	12
Curriculum Committee - Columbus Public Elementary School	15
Arlington Public School Teachers	100
First Community Church, Arlington, Ohio	60
P.T.A. Study Group - Indian Springs School	20
N.C.T.E. Elementary Conference - Panel	250
Los Angeles, California - Group Meeting	40
Ohio Northern University to I.R.A. Group	65
TOTAL	783

Presentation of the Project to personnel from other EDPA/NCTE Projects.

a) Approximately twenty teachers in the Philadelphia Project attended the presentation at the Project Directors' Meeting in Philadelphia.

b) Five persons from the Portland and Chapel Hill Projects viewed the slides and discussed the OSU/CPS Project with two Teaching Associates from the Ohio State University informally at the NCTE Elementary Conference in Los Angeles, California.

TABLE 3

INFORMAL PRESENTATIONS OF THE OSU/CPS LANGUAGE ARTS PROJECT TO OTHERS BY PROJECT STAFF MEMBERS

To	Teaching Associates	School Personnel
School Administrators		280
Teachers	52	74
School Personnel	35	
University Personnel	3	6
College Students	101	25
Community Service People		2
News Media		1
Parents	47	60
Community Leaders	13	3
Unidentified		185

TABLE 4

VISITS BY PROJECT PERSONNEL TO OTHER SCHOOLS

	PARTICIPATING SCHOOLS					
	Indianola		Kent		Total	
	Number	Percent	Number	Percent	Number	Percent
Classroom Teachers	5	62%	9	60%	14	61%
Special Teachers*	4	80%	3	50%**	5	62%
Principals	0	0%	1	100%	1	50%
Total	9	61%	13	54%	20	61%***

*All participants were given the opportunity to take a professional trip. For various reasons some elected not to take one.

**Participants were given release time to make visits.

***Three special teachers (Art, Music and Physical Education) served both project schools. They were included in the breakdown for both schools, accounting for the difference in the sum of the parts regarding special teachers.

TABLE 5

PROJECT PERSONNEL WHO TOOK ONE OR MORE PROFESSIONAL TRIPS FUNDED BY THE PROJECT

PARTICIPATING SCHOOLS

	Indianola		Kent		Total	
	Number	Percent	Number	Percent	Number	Percent
Classroom Teachers	7	87%*	9	60%**	16	70%**
Special Teachers	1	20%***	3	50%***	4	50%
Principals	1	100%	1	100%	2	100%
Total***	9	60%	13	60%	22	66%

*The only classroom teacher at Indianola School who did not make a trip was scheduled to go but was hindered due to illness.

**All participants were given the opportunity to take a professional trip. For various reasons some elected not to take one.

***Three special teachers (Art, Music and Physical Education) served both project schools. They were included in the breakdown for both schools, accounting for the difference in the sum of the parts regarding special teachers.

NOTE: In lieu of the professional trip, one special teacher (music) participated in a music workshop at Capital University. This was not counted as a trip, however, in this tally.

NOTE: One classroom teacher dropped out of the project after having taken a trip. This trip was included in this tally, accounting for the variance in total number of teachers on the table and on the current roster of participants.

TABLE 6

PROFESSIONAL TRIPS MADE BY OSU/CPS

LANGUAGE ARTS PROJECT PERSONNEL

Meetings	Directors	T.A.'s	Project School Principals	Teachers	Total
Quail Roost Conference Durham-Raleigh, North Carolina	2	1	2		5
N.C.T.E. National Convention Atlanta, Georgia	2			2	4
Philadelphia/Temple Project Philadelphia, Pennsylvania	2		2	6	10
Martin Luther King School Evanston, Illinois	2	3	2	8	15
N.C.T.E. Conference in Los Angeles and Project Directors Meeting in San Francisco, California	2	3			5
International Reading Association National Convention Atlantic City, New Jersey				2	2
Childhood Education Association International Conference Milwaukee, Wisconsin				1	1
Seawell School Chapel Hill, North Carolina		1		2	3

OTHER EVIDENCE OF "MULTIPLIER" EFFECT

1. Three teachers from Arlington Schools (Wilson Hill Elementary) heard about the program by way of a student teacher who is the advisee of the husband of one of the Teaching Associates in the Project. Being interested, the teachers visited the Project Schools, went back and rearranged their own classrooms, setting up learning centers in them.
2. A video tape demonstrating a Language Experience lesson was developed in the Project by two Teaching Associates. This tape has been used as follows:
    a. In training approximately 30 Parent Volunteers, a cooperative effort involving the Reading Center at the Ohio State University, Columbus Public Schools, the Urban Education Coalition Right-to-Read Project and Parent Volunteers.
    b. In undergraduate reading methods courses at the Ohio State University.
3. Five Teaching Associates in the Project have also taught undergraduate reading, language arts or children's literature courses for one or more quarters during this year.
4. Four Teaching Associates in the Project have assisted with the training of teachers in various other federally funded in-service education projects throughout the state of Ohio, involving twenty teachers and administrators. A third Teaching Associate conducted a one-day workshop at Union City, Ohio while a fourth conducted three sessions at Highland Park School in the Southwest School District.

5. Data for two doctoral research studies are being gathered in one Project School. One investigator is comparing the amount of student initiated activities in an informal classroom with that in a traditional classroom. The second investigator is looking at the relationship between children's creativity and their reading comprehension.

6. The Project has made some outreach to parents. A formal presentation of the Project was made at two P.T.A. meetings, one at each Project School. Parents from one Project classroom attended a Potlatch held in connection with a study of Indians. Evidences of multiplier effects on parents include:

    a. Four telephone calls to the Office of Evaluation, Columbus Public Schools from parents requesting information related to the Project.

    b. Nine parents from another school area visited one Project School stating that they had heard of the Project and were considering moving into the area so that their children could attend it.

7. One of the Directors of the Project has written an article about the Project, "The Giant Stirs," which was published in *The Junior League Topics*, March, 1971.

8. Potential multipliers are anticipated through future roles of the Teaching Associates (Graduate Students) involved in the project. One will help conduct a workshop this summer on Science in the Informal Classroom. Two who are currently completing their doctoral programs, have taken teaching positions in other universities to begin this Autumn (one at the University of Rhode Island, the other at Penn State University).

NOTE: There were no outside teachers or staff brought into the Project. Neither were teachers outside of the Project group used as consultants.

2. Project Director's Report for Seawell Elementary School Language Arts/Reading Project -- Dr. Paul Pritchard, Project Director.

Five educational communities participated in this project. A total of 9 professors from the five universities in the vicinity which participated -- Duke University, University of North Carolina/ Chapel Hill, Shaw University, North Carolina Central University and Catawba College -- provided on-campus orientation for their students, then accompanied them for on-site observation, and concluded by assisting the Seawell staff with discussion of observations. Additional university involvement occurred with the project director visiting four university classes to lecture on the model school and its impact in the area of language arts. University consultant help was also utilized for inservice training of Seawell faculty in the following areas: organizational patterns, diagnosing, behavioral objectives, student self-concepts, language development through learning centers, and development of reading programs.

Approximately fifty graduate students were involved in the Seawell project in the following assignments:

1) Six Masters of Arts in Teaching candidates were placed in the open classrooms at Seawell and assumed major teaching responsibilities functioning as vital members of teaching teams. Team leaders and the principal assumed supervisory responsibility and conducted an evaluation of their abilities for the university. The MATs attended weekly faculty meetings, receiving valuable inservice direction from these programs.

2) Three graduate externs in Psychology from UNC/Chapel Hill received placement in the classrooms at Seawell where they identified, tested, observed and treated individual and groups of students with behavior problems.

3) Three speech therapists from the Graduate School of Education were placed at Seawell where they identified, tested, observed and treated in the classroom individual students with speech difficulties.

4) The remaining graduate students received orientation, observation and follow-up on techniques in development of communication skills.

Undergraduate students involved in the project numbered 115 and assisted in the following capacities:

1) In cooperation with LINC, six male undergraduates from area universities participated as interns in open classrooms. These interns gained valuable observation experience, helped teachers develop new programs, provided individual attention for students and organized art projects, nature hikes, athletic activities and others.

2) Again in cooperation with the University of North Carolina, two undergraduate practice teachers were utilized as practice teachers, one majoring in art education and one majoring in physical education. Both students established outstanding programs in their areas of interest and were able to observe and function effectively in a model school.

3) The remaining number of undergraduate students received orientation, observation and follow-up on techniques in operating a language development program in the open classroom.

An overall total of 640 visitors came to observe at Seawell during the 1970-71 school year. They represented a diverse group of professionals, including: administrators (superintendents, assistants, etc.), county grand jury members, elementary school teachers (local and state-wide), college students (graduate and undergraduate), teachers aide trainees, parents, community visitors, school board members, and one congressional aide.

Of the overall total of 640 visitors, 379 were outside teachers brought into the project throughout the year. These participants received initial inservice training at their own schools, focused around the identification of individual student needs, development of communication skills, classroom organization and independent learning. While at Seawell their four-day sessions were divided into observation/participation in the classrooms (i.e., diagnosis, effective reading instruction, teacher-made materials), with all activities focusing on language development activities. Following on-site observation these teachers received inservice follow-up programs at their individual schools. Time was spent in each teacher's classroom providing assistance to the teacher in the development and implementation of a total language program.

In addition 5 teachers were brought in from outside the project group. These consultants conducted inservice workshops for Seawell teachers, providing classroom observation and consultation for them.

Of the total 150 families who had children in the Seawell project, all were involved to some degree at one time or another. Two formal parent organizations existed, one appointive membership (PAC) and the other elective (PTA). The Principal's Advisory Council was composed of 18 parents appointed by the principal. They were selected as representative racially and geographically of the student population. The Council served as a major source of communication between parents and administration with the Council assuming responsibility for passing on their knowledge gained to other members of the school community. There were 5 meetings during the 1970-71 school year. The PTA was organized along functional lines with activities following usual PTA duties. There were 7 meetings throughout the year with major emphasis on information and socialization.

On a more individual level, major contact was established with each family by a home visit. All Seawell families were either visited or given the option of declining a visit. The program was explained to the families with notations entered into a master card file system as to the families' availability to work in the school. In the spring, every Thursday morning was open to parents for observation-orientation in the classroom. An estimated 50 Seawell parents took advantage of this.

Parents were utilized on regular schedules to work in the classroom and around Seawell. Four mothers regularly attended Friday workshops to develop teacher materials while an estimated 20 parents were utilized in the classrooms at varying times. Their activities included establishing interest centers under teacher direction, aiding with individual students, field trips, class parties, and teacher aid duties. Four members of the Seawell faculty were also parents and one assistant teacher was a parent. There were approximately 15 Saturday mornings when 3-10 fathers (and occasionally mothers) would work on developing the school playground.

3. Project Director's Report for the Temple University PIRLT Project, Philadelphia, Pennsylvania -- Dr. Howard Blake, Project Director.

Temple University professors and students were directly involved in this project. Two senior professors served as the project leadership, and 5 professors acted as consultants and seminar leaders. Two graduate students performed duties as full-time assistants serving as demonstration teachers and resource persons and developing instructional materials. Additionally, 40 graduate students participated as teachers and received ten semester hours of graduate credit for involvement in the program. Undergraduate students, also totaling 40, assisted as student teachers in classrooms of participating teachers.

Among the visitors participating in the project were: 1 Philadelphia Public School Board member; 4 visiting teachers who served as consultants in special areas; and 24 others, whose positions include: reading and language arts supervisors of the school district, staff members at Research for Better Schools, the reading and language arts supervisor of Delaware County schools, teachers in Philadelphia schools, and faculty members from Temple. This group of visitors did not include directors of the other EPDA projects and the teachers from Columbus who came with their director.

The project staff presented the dimensions of the project to various education professional audiences, including: three meetings of the Citizens Commission on Public Education in Philadelphia; two meetings of the elementary school principal groups in Philadelphia; one group of student teaching supervisors at Temple; one National Conference on Language Arts in Los Angeles; and one meeting of the Pennsylvania Research Association. Project staff was also scheduled to present the dimensions at the Pennsylvania Council of Teachers of English conference in October, and at the National Council of Teachers of English pre-convention workshop in November.

Parents of students in the participating schools also became involved in the project. Twelve parents were trained as aides to assist teachers in the reading/language programs. These parents were also trained to organize small seminars of other parents to teach them how they can assist children at home with learning to read. Approximately 50 parents volunteered to participate in these seminars. The 12 parent aides met regularly on Thursday mornings from 9 to 12 for a seminar or training session. From September through February they met weekly; March through June, bi-weekly. A total of 22 three-hour sessions were held. The parent aides as a group did not meet regularly with the group of participating teachers. They plan to correct this situation next year. These parent aides also worked in the classrooms of an assigned participating teacher one day per week on a scheduled basis. They also spent one-half day per week in the volunteer seminars for the other parents.

Evidence of parent participation is seen in the following aspects of their participation:

1) The attendance records of parent aides at the training sessions was regular: average attendance was nine parents.
2) Attendance by parent aides in the classrooms was consistently regular.
3) Parent aides were continually utilized in the project from the beginning of the year to the end. Of the 14 original parent aides, ten continued throughout the year.
4) In general, the attendance of parents at volunteer seminars in homes was good.

The project director was asked to summarize the evidence of multiplier effect. The following are the various areas in which the project is considered to have been influential in its impact:

1) The two Temple professors assigned to the project will hold joint appointments with the School District for next year to continue giving leadership to the project, to teach a course for reading and language arts supervisors of the School District, to consult workshops, and to serve as consultants on the reading and language arts programs -- using in all this work the approach developed in the project.
2) One of the doctoral students who served on the staff this year has taken an appointment for next year as a master teacher at Edison High School in a project that has many similarities to the PIRLT project, enabling her to extend the PIRLT approach to that project.

3) During the summer of 1971, two members of the project staff developed a booklet putting forth the main strands in PIRLT, to be disseminated throughout the School District and utilized for modeling other language/reading programs after PIRLT.

4) During the summer of 1971, some members of the project staff prepared instructional materials that were developed in PIRLT for dissemination throughout the School District.

Although evidence of the achievements of the project are tentative at this point, the School District feels satisfied enough that it has funded the project for another year, with allocations for two language arts/reading supervisors, the continuation of the services and training of 14 parent aides, additional instructional materials, and the clerical assistance necessary.

CHAPTER V

RESULTS OF TEACHER PRACTICES AND ATTITUDE SURVEY

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Introduction

Two of the major goals of the five NCTE/USOE projects concerned the attitudes of project participants and their teaching practices in the language arts/reading areas. If the centers were effective, teaching practices should change toward the use of more innovative and a greater variety of techniques and practices. Further, if the projects were effective, it seemed reasonable to assume that the attitudes of teachers toward the schools, their administrations and their students would positively change.

Appendix C presents a copy of the Teacher Practices and Attitude Survey developed by the SPECS evaluation team. It should be noted that each of the project directors provided, first, a series of ideas about the survey, and, finally, reaction to the first draft. The survey was scored in three subscales -- teacher attitudes, teacher practices and a miscellaneous field -- that allowed us to tap ideas and feelings teachers had about their effectiveness in dealing with disadvantaged children and the teaching of non-standard dialects. Open-ended questions concerning priorities given to certain language arts teaching allowed us to tap still further the ideas of participating teachers.

Attitudinal change is an important attribute in assessing the success or failure of an innovative program. Research has shown that the attitude that one holds toward an innovation or program will determine in large part whether or not the innovation is adopted.

Researchers have shown that the individual attribute in personality characteristics is so important that one study labeled individuals on a continuum from Innovators to Laggards: Innovators being those that readily accept an innovation and are somewhat positive of success, and Laggards being those individuals who involve themselves in innovative activities only from a reserved or pessimistic point of view. One need not belabor the fact that attitudes are important to the success or failure of any program, but simply state that a measure of attitude and a subsequent change in attitudes over a period of time can be a useful tool in helping evaluate a program.

The Role of Evaluators

Professional evaluators frequently are called upon to evaluate programs with techniques ranging from personal observations to controlled research studies done by using complex, statistical tools in a controlled environment with carefully selected groups of subjects. In studying education goals and practices, evaluators are frequently called upon to examine a group of ideas and come forth with an orderly presentation of data that can be used by the decision-making unit of a school or agency to make reasonable judgment about future planning. This is not always a simple task, especially in light of the many needs and desires of the diverse population usually examined. The role of the evaluator is, therefore, a unique one, but one which is basically concerned with helping teachers and administrators define goals for pupils, learn to discover differences among pupils and teachers, and design programs to find out whether or not instructional procedures are good.

Problems of Evaluation

Upon closer examination of evaluative studies, one realizes that most research data is only a single bench mark taken as a description of a process, phenomenon or attitude at the time and is not equivalent to understanding the total person or dynamics of a group. Unless the process is static, something quite rare in human behavior, predicting future behavior points at ...x + 1, x + 2...x + n...based on an observation point at x is risky. If we are not willing to make assumptions about the man and his social arrangements, such prediction may be impossible. Considering this fact in the evaluation of this program, we sought information at two different periods of time. The problem associated in using the same instrument twice was, of course, considered. But these objections were superceded in order to survey the attitudes and feelings of those responding to the instrument, as well as to assess changes in these attitudes.

Another problem in utilizing data effectively for evaluative purposes is the problem of presenting the data in a useful manner. Unfortunately, there is a frequent lack of relevant information in research data. While researchers, by the nature of their training, are fascinated by their data, teachers and other program professionals are overwhelmed by the number of problems which need change. Research data or findings, in short, seem foreign and remote when compared to the real world as seen by administrators, reading specialists and teachers.

If educational research demonstrates that the learning rate of public school children, randomly selected and enrolled in a special reading program funded for a half-million dollars each year, is not significantly higher statistically than a matched subpopulation not in the special program, what administratively should result? Abolish the program and write off the year's expense or continue the program for another year? What if the program is in its first of three years of promised funding and the federal representative is very interested? Complexity of decision increases if this program is directed at underachievers, for even if the program is ended the problem still remains. A frequent administrative response to such findings, assuming this program is not itself a public issue, is to ignore the data and continue. Thus, the survival of the program can override the insight of the data.

Responses to Subjective Items

The survey questionnaire administered to participants in the NCTE/EPDA project allowed teachers to respond to open-end questions concerning effective techniques and objectives for reading programs and to state how individual competence in teaching reading could be improved. Participants listed in rank order the ten (usually less) most effective techniques or activities for teaching reading. They also listed in rank order ten objectives for their reading program.

The pre-test results of the survey revealed that teachers were using a variety of instructional techniques. The two most frequently occurring ones were use of the language experience approach and individualized reading. Phonics was another popular method. Other techniques that were mentioned included basal readers, manuals and workbooks, S.R.A. materials and diagnostic testing. The language experience approach was the most frequently mentioned technique.

When asked to list in rank order ten objectives for the reading program, many respondents listed fewer than ten objectives. Again, there was a wide variety of responses. The most frequently occurring objectives were to get the child to enjoy reading and to develop an appreciation for reading. Other objectives ranked as number one centered around the building and development of certain basic reading skills dependent on the child's level of ability.

Many respondents to the questionnaire seemed at a loss to answer the question of how they could improve their competency in the teaching of reading. Some of the ways mentioned dealth with use of teacher aides and the availability of materials related to the activities and needs of children. Other responses included knowledge of many techniques for the teaching of reading, workshops to gain new ideas, and better diagnostic means of measuring the child's achievement.

The post-test results of the survey did not show measurable change. Most responses listed on the pre-test survey were again mentioned the second time. Again, the most frequently occurring responses to the question of effective techniques to teach reading were the language experience approach and individualized instruction. Other techniques were basal readers, flash cards and phonics activities.

Objectives for the reading program listed on the post-test survey centered around increasing the reading ability of each child. Again, one of the most frequently mentioned objectives included getting the child to enjoy reading.

Although many kinds of activities occurred during the NCTE/ EPDA projects, the responses to the three narrative-type questions on the survey showed little change. It is difficult to determine whether this lack of change was a result of the way the questions were worded or the projects themselves. Other indications of change can be gleaned from other questions on the survey.

Activities or techniques used in the language arts program tended to favor the language experience approach. However, the change was not significant. Again, a variety of techniques were listed. The question intended to identify the means by which teachers could increase their competence in the teaching of reading brought fewer responses on the post-test than on the pre-test.

The responses to the three subjective questions on the Teacher Practices and Attitude Survey indicate little change. One plausable explanation would be that the pre-test questionnaire was administered after the teacher had participated in pre-school workshops conducted by the project directors. The most frequently mentioned practices and objectives on both the pre-test and post-test closely paralleled the most frequently mentioned practices and objectives of the projects. The positive correlation of pre-test/post-test results on this part of the survey with the objectives of the programs as listed in the proposals would seem to indicate that the workshops produced positive results.

Sample

The Teacher Practices and Attitude Survey was completed by a total of 158 teachers and administrators. Table 1 presents the distribution of subjects by center and by position held. Table 2 presents the same data for those subjects whose surveys were completed both pre and post and in suitable form for analysis.

TABLE 1

THE DISTRIBUTION OF TOTAL SUBJECTS RESPONSE BY POSITION AND LOCATION

Location	Administrator	Teacher	Total No.	Total %
Berkeley	0.0	96.4	27	17.1
Chapel Hill	0.0	100.0	28	17.7
Columbus	6.1	93.9	33	20.9
Philadelphia	0.0	100.0	27	17.1
Portland	7.0	93.0	43	27.2
Total Number	5	153	158	
Total Percent	3.2	96.2		100.0

TABLE 2

THE DISTRIBUTION OF DATA USED IN STUDY BY POSITION AND LOCATION

Location	Administrator	Teacher	Total No.	Total %
Berkeley	0.0	100.0	16	15.4
Chapel Hill	0.0	100.0	6	5.8
Columbus	10.0	90.0	29	27.9
Philadelphia	0.0	100.0	25	24.0
Portland	3.6	96.4	28	26.9
Total Number	3	101	104	
Total Percent	2.9	97.1		100.0

The questionnaire consisted of three major sections: 1) attitudes toward general school practices, 2) frequency of use of various teaching techniques, and 3) attitudes toward parent involvement and non-standard dialects.

In coding the responses pre- and post-test results were transferred directly from response sheet to punch card, with the exception of the open-ended questions in Part 3. Because of the open-ended nature of some of the responses in Part 3, they were included in the earlier analysis. This left 66 questions which were used in analyzing the differences between pre- and post-test responses, and among the various centers. In order to determine whether or not significant differences existed among the centers on either the pre- or post-tests, between the pre- and post-test scores, or whether there was an interaction between the way individuals in the various centers reacted from pre- to post-test, a Factorial Design Analysis of Variance was completed.

The pre- and post-test means of the three sections of the Attitude Survey are presented in Table 3. It may be observed that the Chapel Hill, Columbus and Portland sections had the highest pre-test attitude scores, and were very homogeneous with respect to pre-test attitude scores. The Berkeley and Philadelphia centers had somewhat lower pre-test attitude scores. A high score on Section 1 of the Attitude Survey indicates agreement with the positive attitudes stated in the survey. Examination of the post-test scores on Section 1 of the survey reveals that all of the centers, except Berkeley, had lower attitude scores at the time of post-test than they had evidenced at the time of pre-test. The Berkeley center, on the other hand, had a higher level of agreement with the positive statements of Section 1

TABLE 3

DISTRIBUTION OF CELL MEANS BY CENTER LOCATION

	Cell Means	
Location	Pre-Test	Post-Test
Test 1:		
Berkeley	164.06	178.62
Chapel Hill	185.75	176.75
Columbus	183.61	169.43
Philadelphia	175.58	169.29
Portland	184.00	180.96
Test 2:		
Berkeley	167.12	164.75
Chapel Hill	167.62	145.87
Columbus	167.54	172.04
Philadelphia	177.54	178.58
Portland	177.54	182.04
Test 3:		
Berkeley	125.06	127.50
Chapel Hill	131.25	121.12
Columbus	125.96	124.11
Philadelphia	129.62	124.17
Portland	126.32	128.54

at the time of post-test than had been evident at the time of pre-test. Some decline in attitude might be expected in any September-May comparison.

Viewing the pre-test means of Section 2 on the Attitude Survey, it may be observed that Philadelphia and Portland showed the greatest frequency of use of the teaching method indicated in the survey, with Berkeley, Chapel Hill and Columbus centers showing somewhat less frequent use of the method included in the survey. Examination of the post-test means for Section 2 indicates that Columbus, Philadelphia and Portland centers increased in their utilization of these teaching techniques, while both the Chapel Hill and Berkeley centers showed less utilization of these teaching techniques at the post-test than they had at the pre-test.

Statistical Analysis

Table 4 presents a summary of the Factorial Design Analysis of Variance of the pre- and post-test scores in the five centers for each of the three sections of the survey. It may be observed that the differences between the pre- and post-test scores, the differences between centers and the interaction are all statistically significant for Section 1 of the survey. There is a significant decline in agreement with the positive statements of Section 1 overall; there are differences among the centers in the amount of agreement with the positive statements of Section 1; and significant interaction exists in that the Berkeley center showed greater agreement at the time of post-test, while all others showed lower agreement at the time of post-test.

TABLE 4

ANALYSIS OF VARIANCE FOR FACTORIAL DESIGN WITH UNEQUAL CELL FREQUENCY, LEAST SQUARE SOLUTION BY PRE/POST TEST AND LOCATION OF CENTER

Variable	F	df	Significance
Test 1: Attitudinal Questionnaire, General and Special Educational Reading Concepts			
Location of Centers	6.5482	4	.01
Pre/Post Test	7.0223	1	.01
Interaction	7.1593	4	.01
Error		198	
Test 2: Survey of Frequency of Use of Teaching Techniques			
Location of Centers	5.7653	4	.01
Pre/Post Test	0.0459	1	-
Interaction	1.4097	4	-
Error		198	
Test 3: Effectiveness in Dealing with Disadvantaged Children			
Location of Centers	0.6683	4	-
Pre/Post Test	1.9431	1	-
Interaction	3.0510	4	-
Error		198	

With respect to Section 2 of the survey, only the differences between centers were statistically significant. The differences between pre- and post-test scores are probably chance differences. The frequency of utilization of the techniques included in the survey was significantly higher at the Philadelphia and Portland centers than at either the Berkeley or Chapel Hill centers.

With respect to Section 3 of the survey, none of the differences observed in the pre- and post-test scores or between the centers was statistically significant.

Summary

There were significant differences among the centers in mean scores earned by teachers at the various centers on Test 1 (Attitudes) of the Teacher Practices and Attitude Survey. The Chapel Hill, Columbus and Portland centers showed greatest level of agreement with the survey items, with the Berkeley and Philadelphia centers showing less agreement. A decline in agreement with survey items was found for each center, except Berkeley, which showed a significant increase in agreement with survey items. Since agreement on these items is considered a positive orientation, some decline in positive orientation, some decline in positive orientation may be inferred, except for Berkeley. This might be seen as fairly typical of a September-May change.

CHAPTER VI

RESULTS OF THE STUDY OF PUPIL TEST PERFORMANCE

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RESULTS OF THE STUDY OF PUPIL TEST PERFORMANCE

The analysis of pupil achievement and attitude performance will, in this chapter, be reviewed on a center by center basis. Because each center selected its own assessment battery it was not possible to study performance of students across centers. Further we were unable to include the Portland Center students in this section of the study.

The following tables, figures and discussions, therefore, take each center in sequence and review the accomplishments in pupil performance. They are reviewed in the following sequence:

Philadelphia
Columbus
Chapel Hill
Berkley

Philadelphia/Temple

Pre and post-test scores were available for at least some grade levels at each of the centers except Portland. Because control groups were not utilized and different tests were used at the various centers, rigorous between-center inference is not possible. In order to make it possible to identify the salient performance of students and make some inferences about relative strengths, the test data are presented both in tabular and graphic formats.

Table 1 to 6 presents the mean pre- and post-test scores of students in grades 1-6 at the Philadelphia center. Average change scores and change scores presented in z score form are also included in Table 1-6. The use of z scores makes it possible to compare relative performance across scales and to a limited degree between centers. Figure 1 presents the data contained in Table 1 in graphic format. Only subjects who completed both pre- and post-tests were utilized. The pre-test performance is presented as the baseline with post-test performance plotted as deviations from the pre-test line. The standard deviation of the pre- and post-test groups was used as the basis for computing the z score deviations. It may be observed from Figure 1 that grade 1 students in the Philadelphia project earned higher mean scores on the post-test on each of the measures. It may also be observed that the greatest improvement was on the copying, matching and alphabet scales with somewhat lower gain in mean z scores on the word meaning and listening tests.

Figure 2 presents the same data for the scales on which pre- and post-test data were available at grade 2. It may be observed that while both reading comprehension and vocabulary increased, the z score change was greatest in vocabulary.

Table 3 presents the data for grade 3 and reveals improvement only on the vocabulary measure, with little change in the other measures.

Table 4 presents fourth grade data from the Philadelphia project. Improvement may be noted on all the achievement measures, while little change occurred in the attitude measures.

Table 5 presents the data for grade 5 in the Philadelphia project. Again, it may be observed that improvement occurred in all achievement scales. At grade 5 a positive change also occurred in the attitude scores, with the exception of the attitude preference for reading aloud scale.

Table 6 presents the scores for grade six, revealing only modest improvement in reading comprehension but good improvement in other achievement measures. The attitude measures show a decline, except for the measure of confidence in reading which shows an increase in confidence.

TABLE 1

GRADE 1 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Word Meaning	5.84	6.88	1.04	.42
Listening	8.18	9.51	1.33	.51
Matching	4.45	9.51	5.06	1.45
Alphabet	7.53	14.86	7.33	1.92
Numbers	8.65	13.37	4.72	1.29
Copying	4.49	9.84	5.35	1.52
Total	38.82	63.96	25.14	1.70

Figure 1

Grade One Philadelphia/Temple

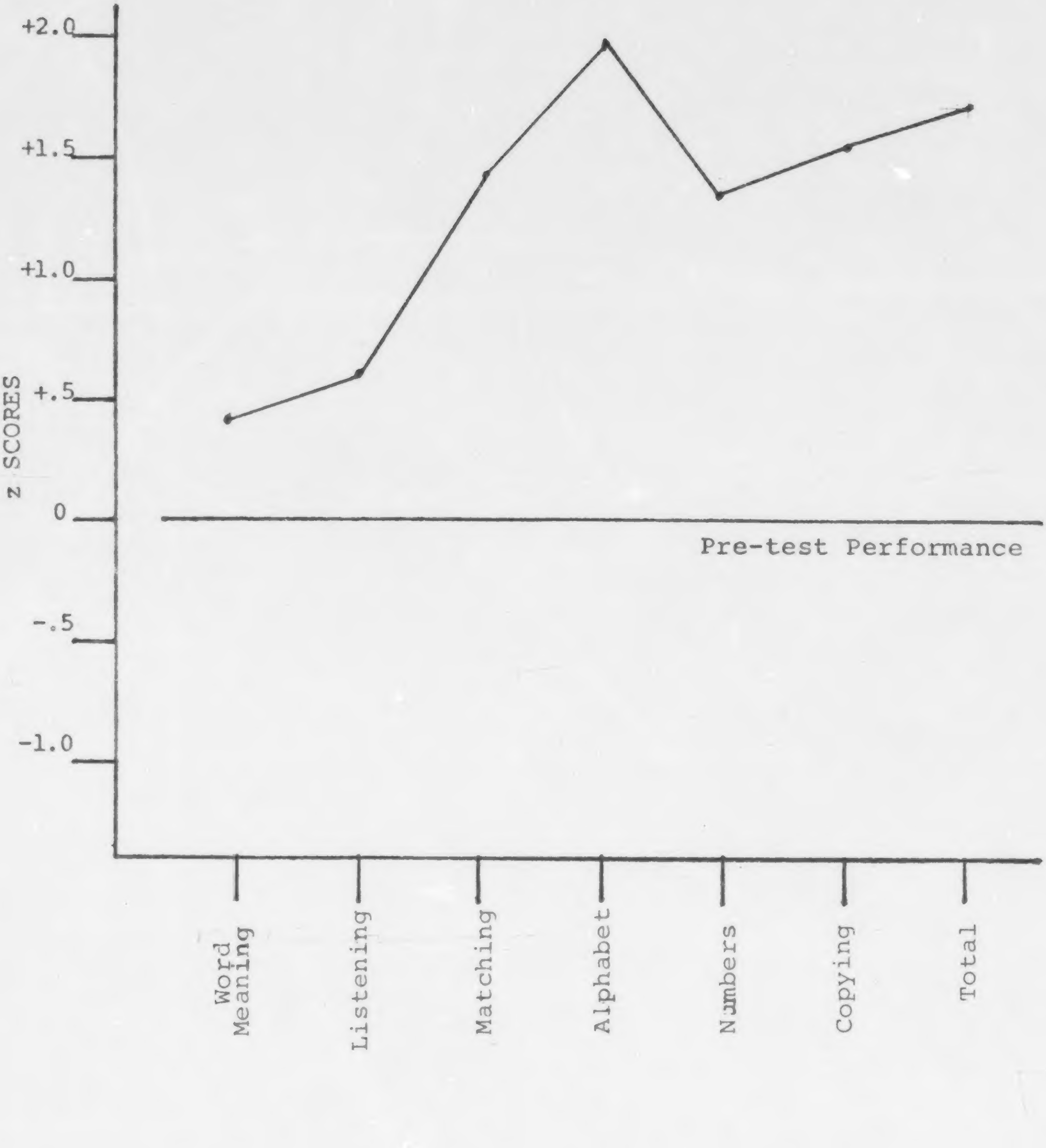


TABLE 2

GRADE 2 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	4.36	5.69	1.33	.21
Vocabulary	44.05	57.68	13.63	.70

Figure 2

Grade 2 - Philadelphia/Temple

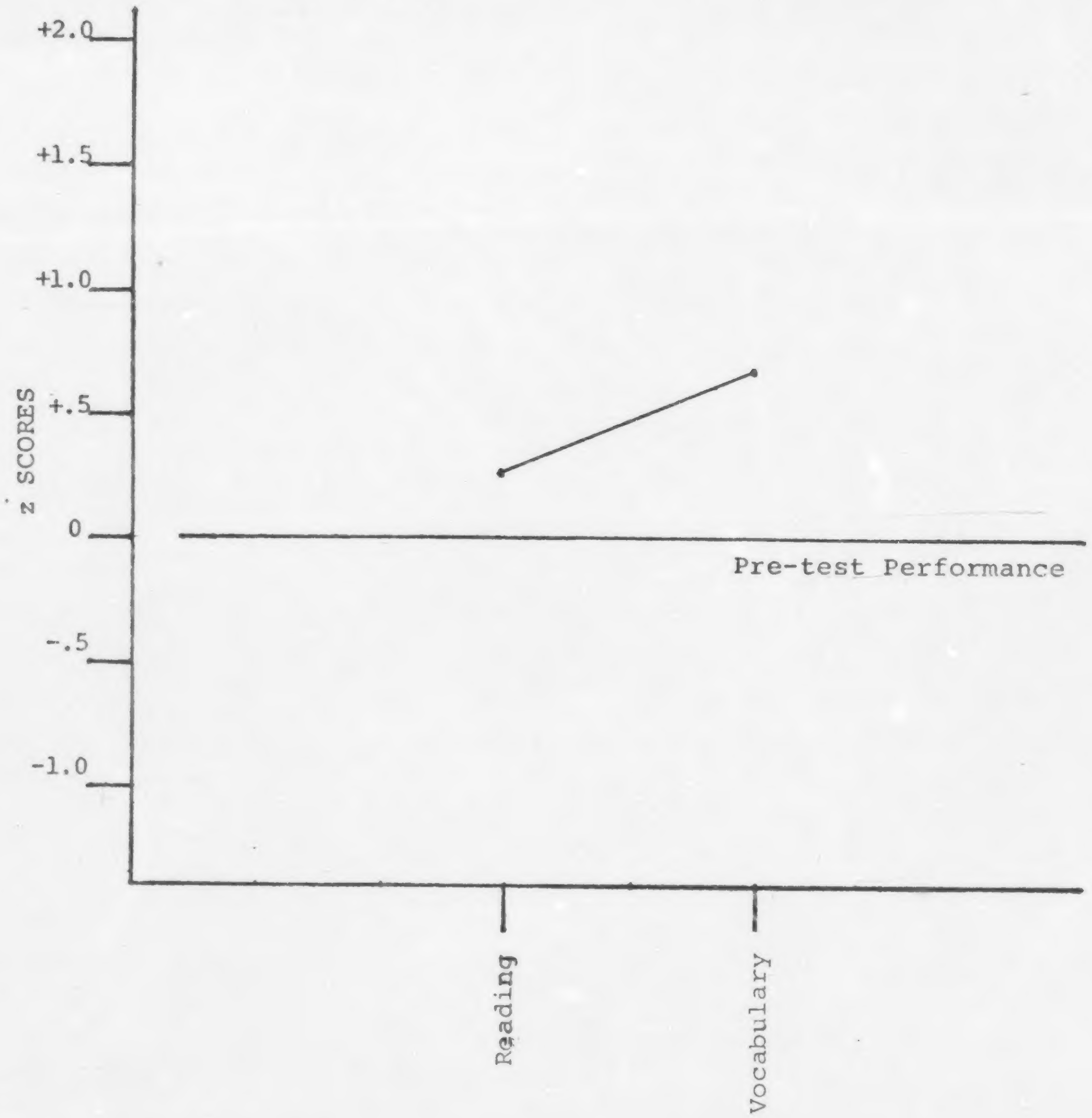


TABLE 3

GRADE 3 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	9.94	10.02	.08	.01
Vocabulary	64.98	71.88	6.90	.50
Total Reading Attitude Score	21.62	21.49	-.13	-.03
Attitude: Liking for Reading	9.84	9.61	-.23	-.09
Attitude: Confidence in Reading	6.92	6.80	-.12	-.08
Attitude: Preference for Reading Aloud	5.16	5.07	-.09	-.05

Figure 3

Grade 3 - Philadelphia/Temple

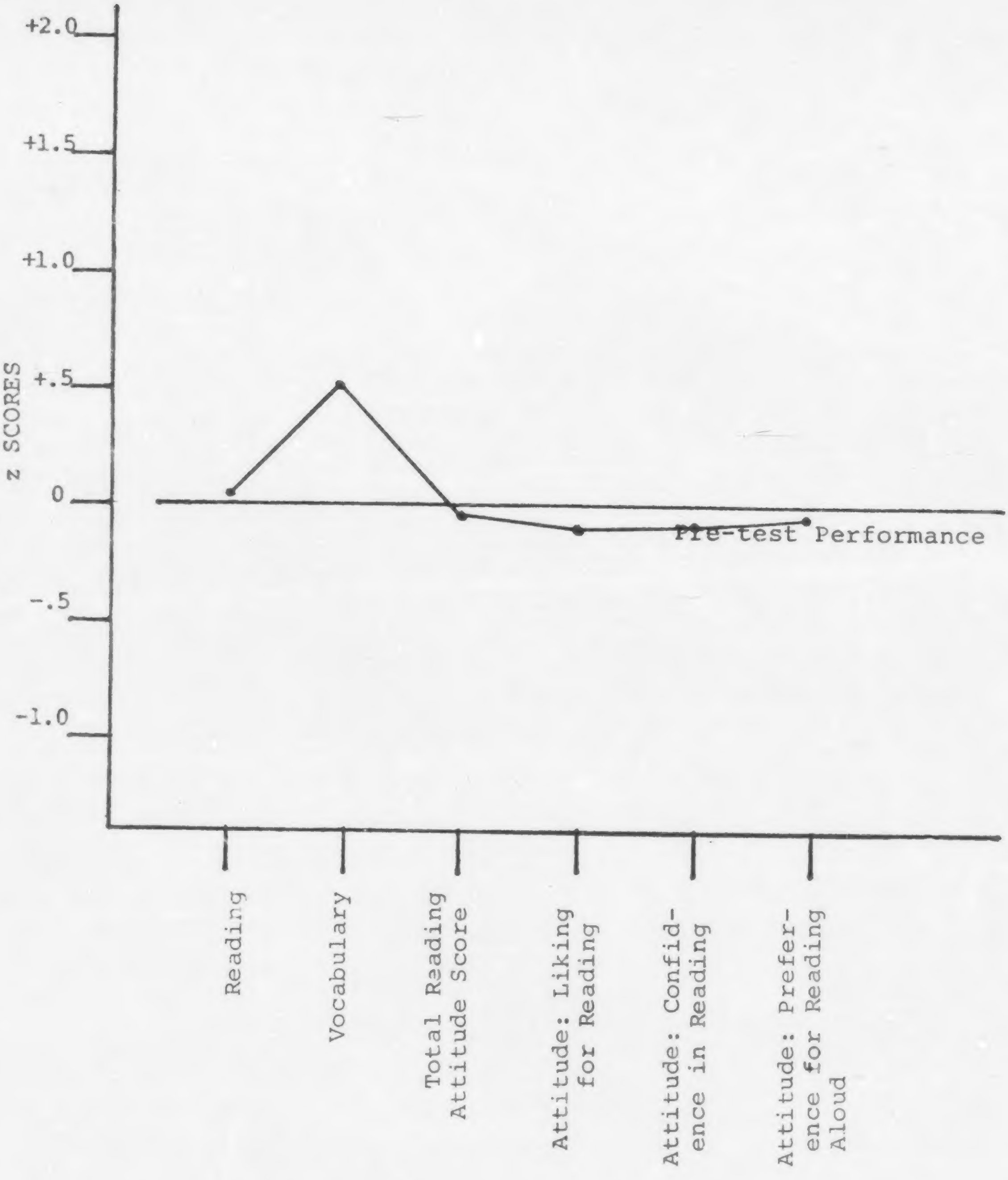


TABLE 4

GRADE 4 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	19.88	22.84	2.96	.27
Vocabulary	14.20	22.63	8.43	.72
Auditory Discrimination	22.21	28.22	6.01	.64
Syllabication	9.82	10.97	1.15	.28
Beginning and Ending Sounds	19.41	22.33	2.92	.41
Total Reading Attitude Score	21.38	20.39	-.99	-.18
Blending	13.34	14.91	1.57	.31
Sound	15.44	19.48	4.04	.47
Attitude: Liking for Reading	10.04	10.18	.14	.04
Attitude: Confidence in Reading	6.46	6.57	.11	.06
Attitude: Preference for Reading Aloud	4.60	4.37	-.23	-.12

Figure 4

Grade 4 - Philadelphia/Temple

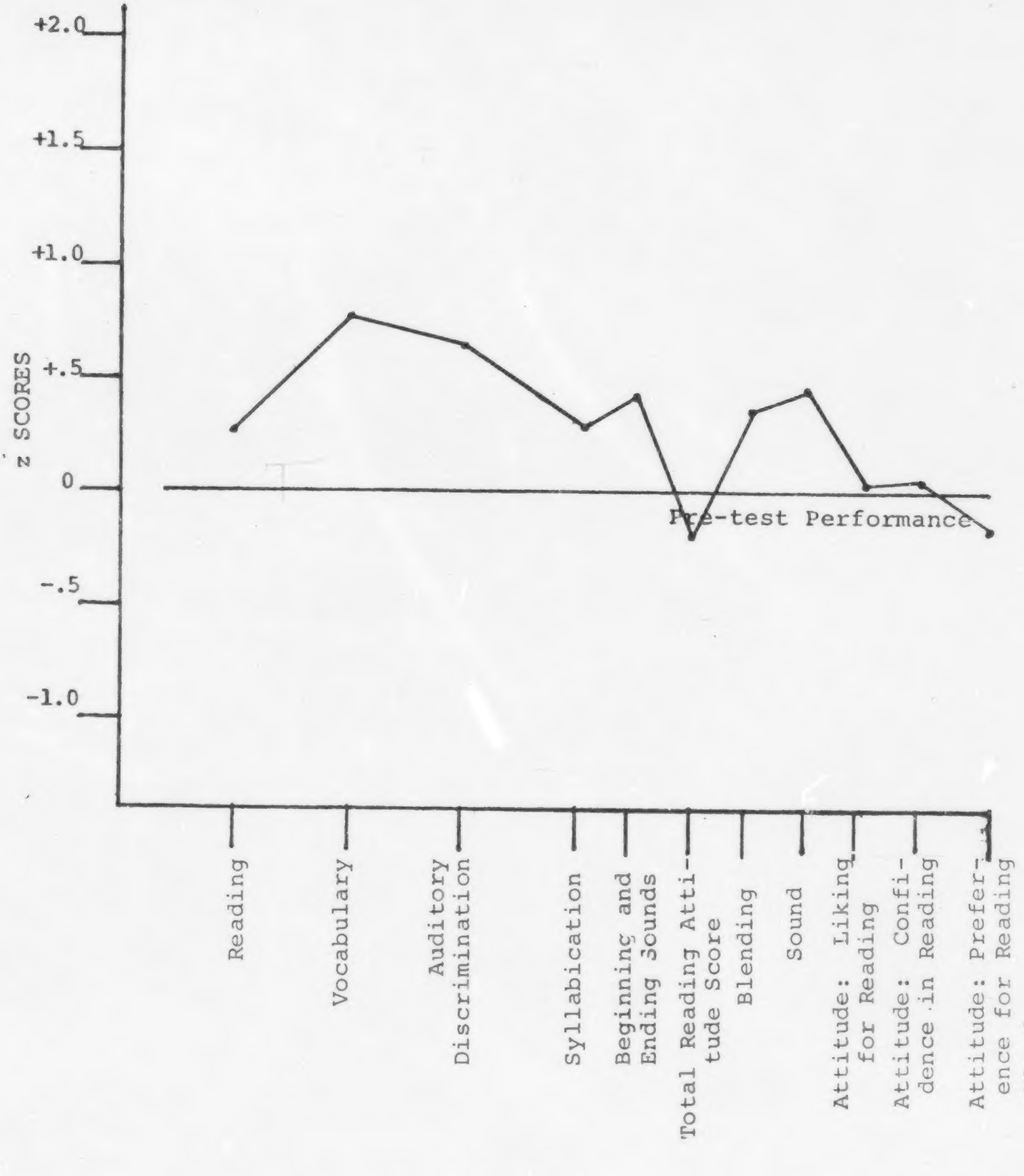


TABLE 5

GRADE 5 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	19.18	27.95	8.77	.83
Vocabulary	13.20	19.84	6.64	1.09
Auditory Discrimination	22.63	29.20	6.57	.58
Syllabication	9.57	12.14	2.57	.61
Beginning and Ending Sounds	18.47	22.79	4.32	.50
Total Reading Attitude Score	22.29	23.80	1.51	.34
Blending	11.20	15.75	4.55	.81
Sound Discrimination	15.91	22.77	6.86	.75
Attitude: Liking for Reading	10.44	12.11	1.67	.56
Attitude: Confidence in Reading	6.32	6.67	.35	.24
Attitude: Preference for Reading Aloud	5.37	5.27	.10	.04

Figure 5

Grade 5 - Philadelphia/Temple

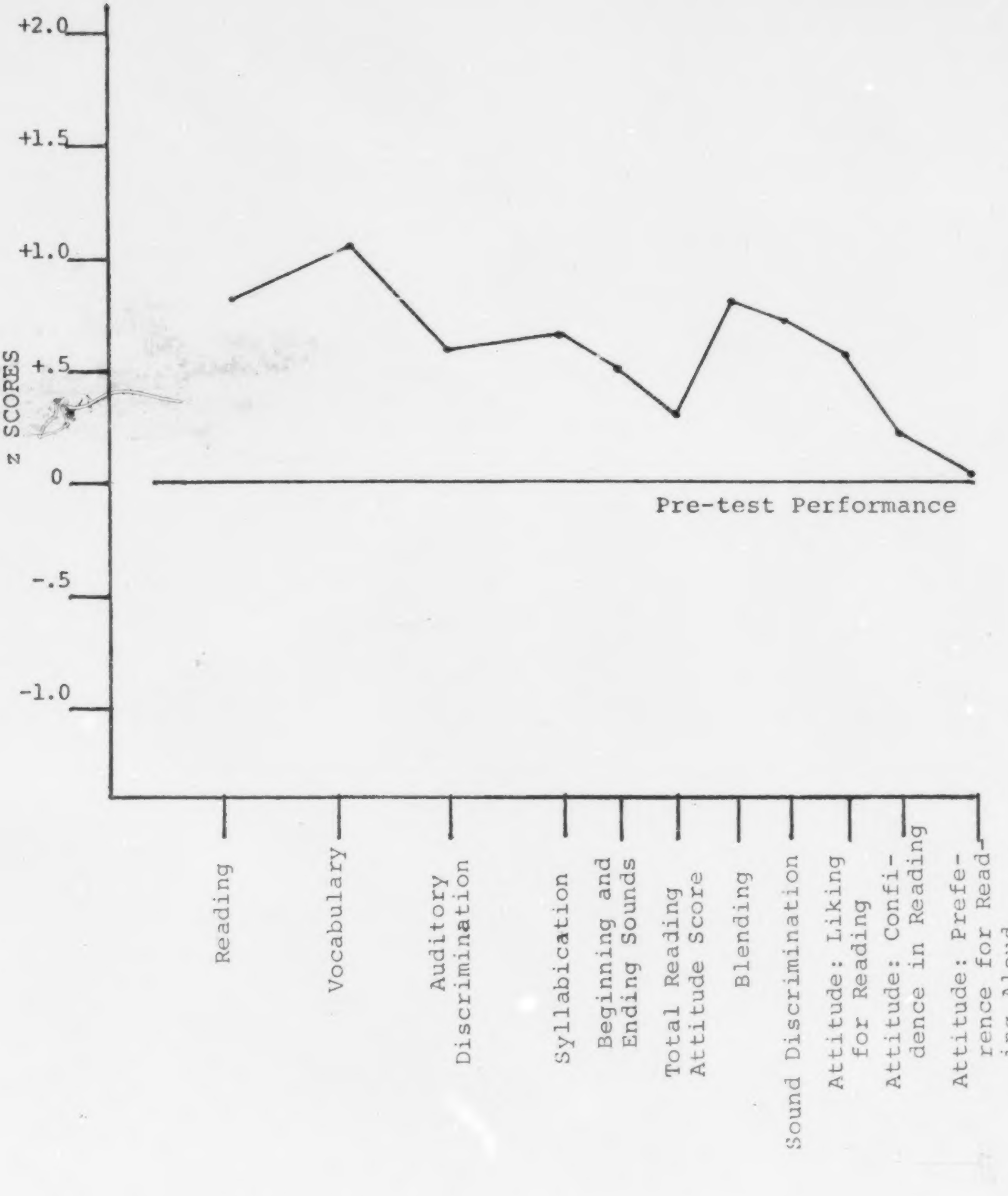


TABLE 6

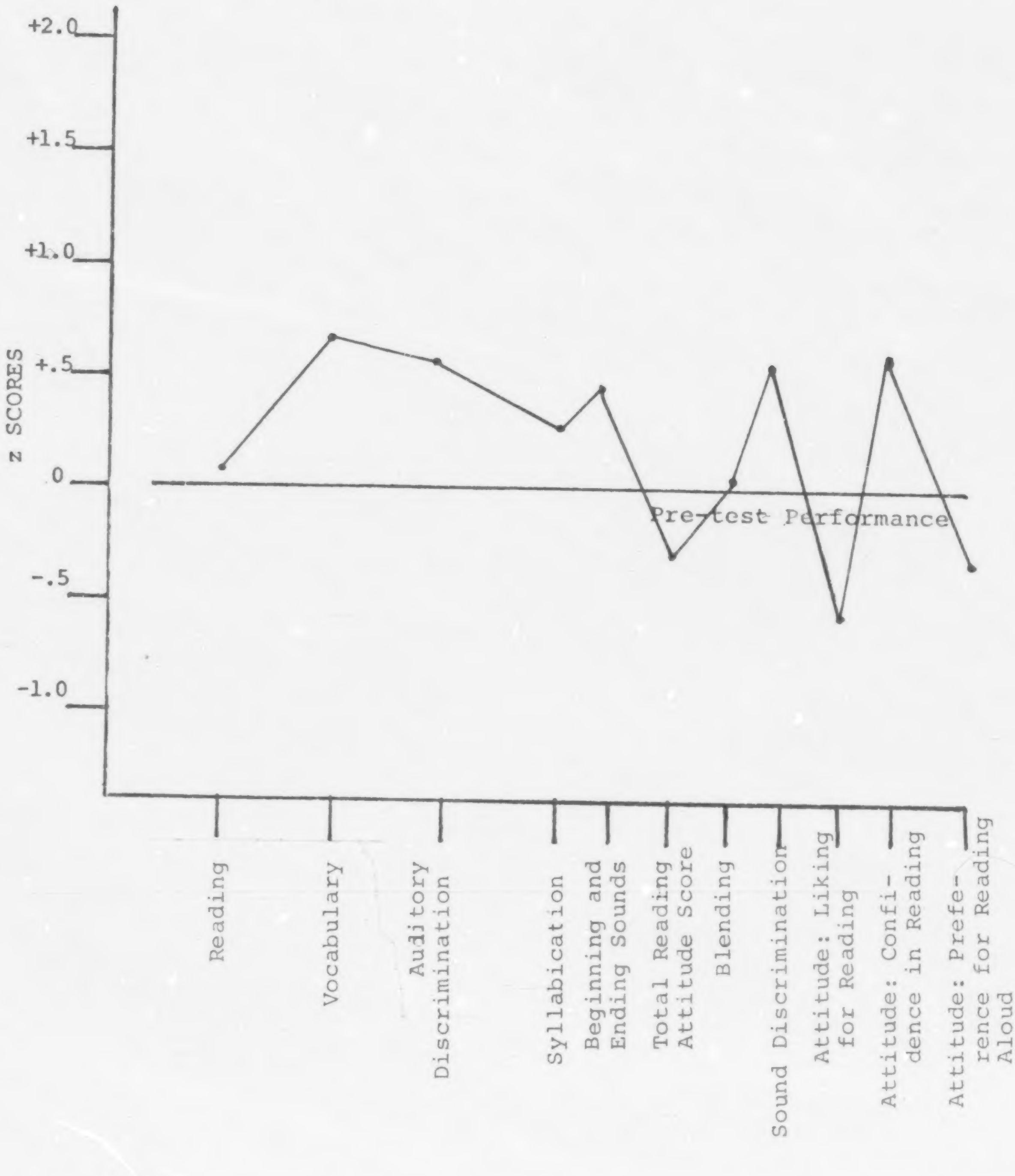
GRADE 6 - Philadelphia/Temple

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	31.46	32.00	.54	.06
Vocabulary	19.25	27.38	8.13	.71
Auditory Discrimination	31.75	37.40	5.65	.66
Syllabication	13.29	14.95	1.66	.37
Beginning and Ending Sounds	27.04	30.80	3.76	.62
Total Reading Attitude Score	21.68	19.83	-1.85	-.31
Blending	16.83	17.10	.27	.05
Sound Discrimination	25.63	30.60	4.97	.72
Attitude: Liking for Reading	10.36	8.92	-1.44	-.50
Attitude: Confidence in Reading	5.32	5.46	.14	.65
Attitude: Preference for Reading Aloud	6.05	5.29	-.76	-.31

Figure 6

Grade 6 - Philadelphia/Temple



Ohio State/Columbus

Tables 7-10 present the pre- and post-test scores of students in grades 1-4 at the Columbus, Ohio State center. Figures 7-10 present the same data contained in the tables in graphic format. The pre-test performance is presented as the baseline with post-test performance plotted as deviations from the pre-test line. The standard deviation of the pre- and post-test groups was used as the basis for computing the z score deviations. It may be observed from Figure 1 that grade 1 students in the Ohio State Project showed very little change. Their attendance did improve but not significantly. The reading attitude post-scores were below the baseline.

Figure 8 presents the same data for the scales on which pre- and post-test data were available at grade 2. It may be observed that while reading comprehension and vocabulary improved on the post-test, reading attitude showed a decline when compared to the pre-test. Attendance shows the greatest improvement among all variables.

Figure 9 presents the data for grade 3 which reveals that reading comprehension has the greatest gain with vocabulary, reading, attitude and attendance also showing gains.

Figure 10 presents the data for grade 4. It may be observed that there was improvement on the reading comprehension measure with little change on the other measures.

TABLE 7

GRADE 1 - Columbus/Ohio State

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
OSU Reading Attitude Inventory	388.40	385.90	-2.50	-.04
Attendance 1969-70	148.04	157.82	9.78	.34
Days Absent 1969-70	20.84	15.53	-5.31	-.34

Figure 7

Grade 1 - Ohio State/Columbus

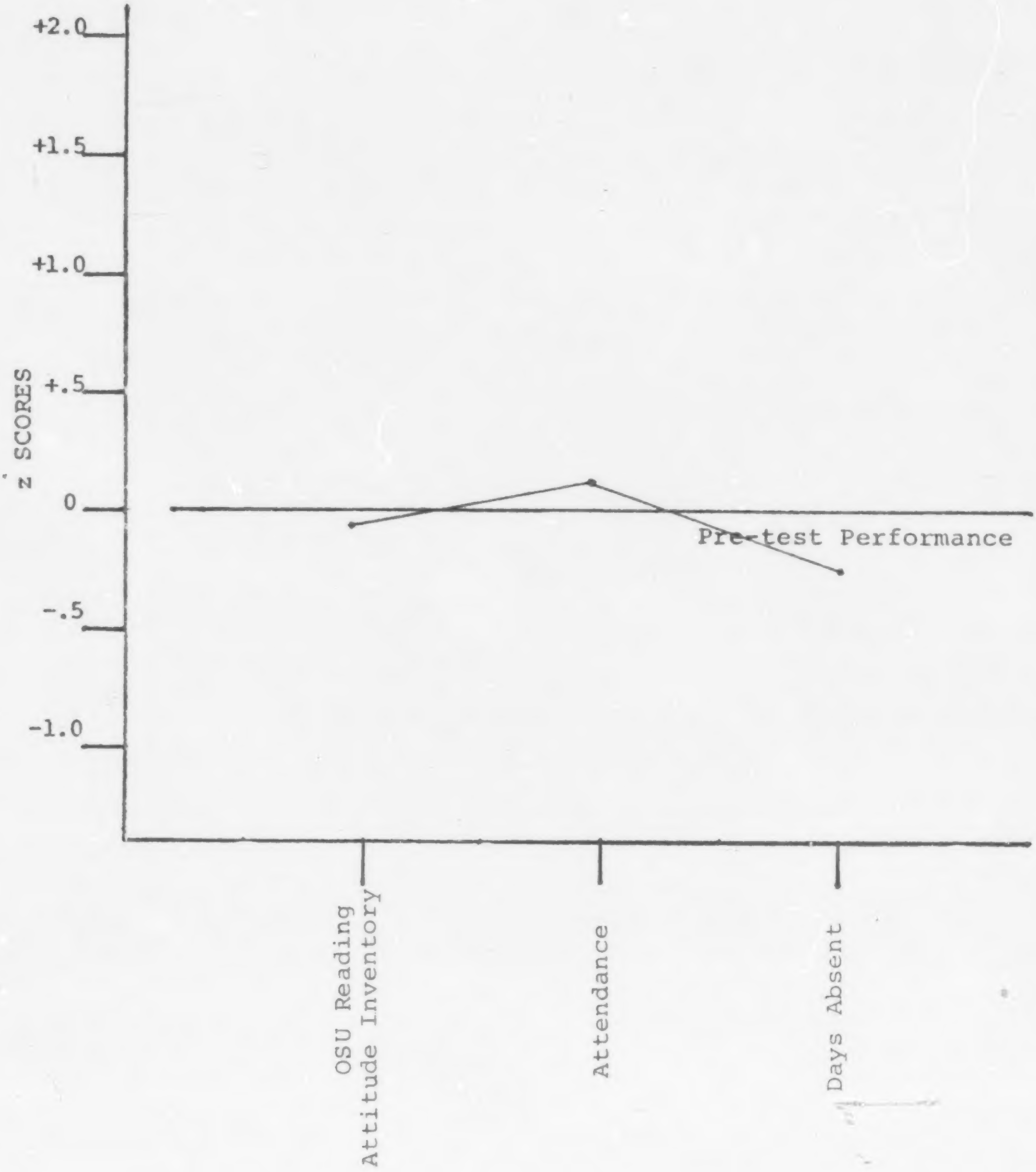


TABLE 8

Grade 2 - Columbus/Ohio State

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading Comprehension	7.28	9.32	2.04	.39
Vocabulary	58.91	69.93	11.02	.29
OSU Reading Attitude Inv.	391.58	376.57	-15.01	-.21
Attendance 1969-70	147.30	161.18	13.88	.48
Days Absent 1969-70	12.17	13.02	.85	.07

Figure 8

Grade 2, Ohio State/Columbus

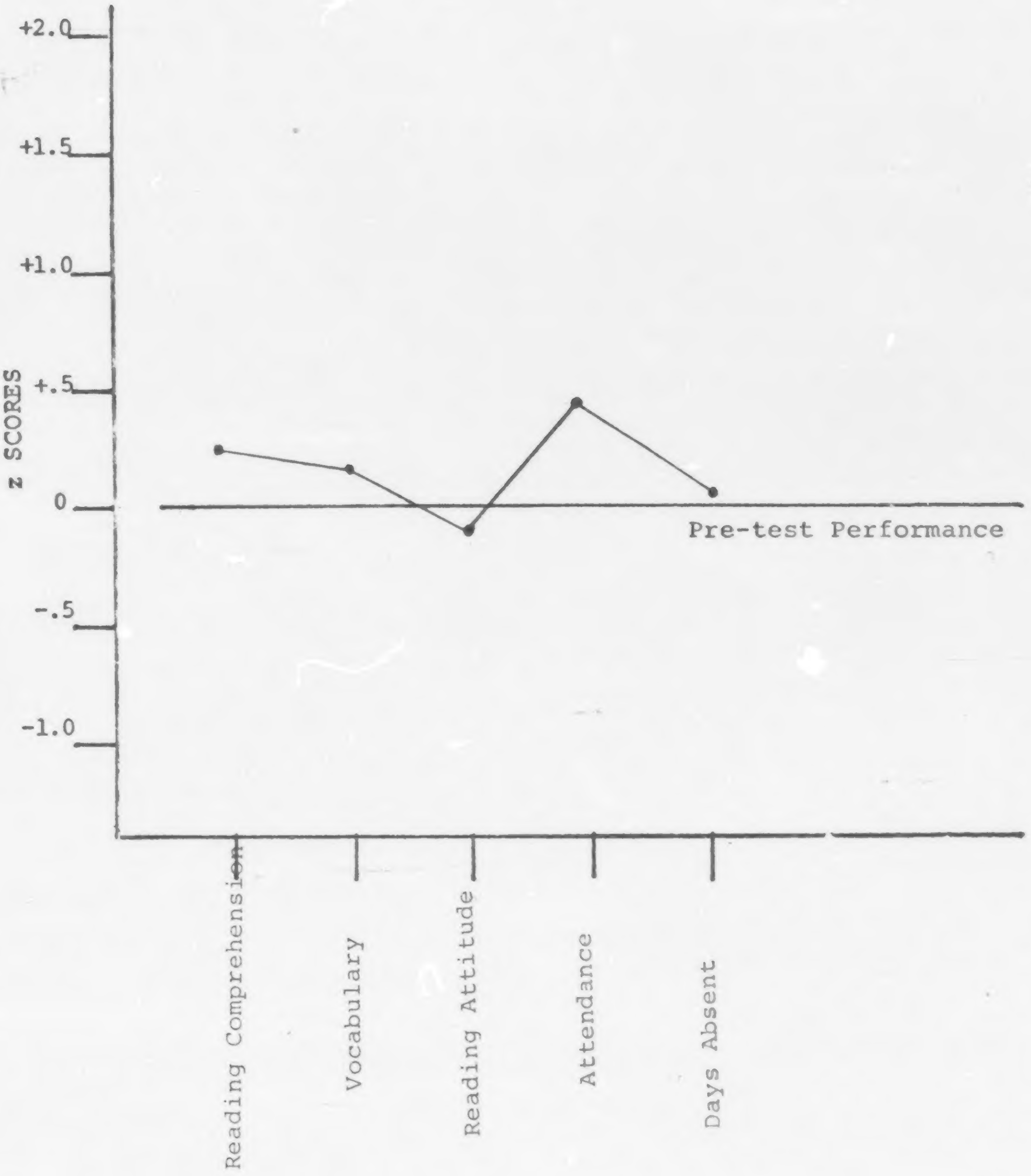


TABLE 9

Grade 3 - Columbus/Ohio State

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading Comprehension	15.10	20.02	4.92	.52
Vocabulary	11.70	15.17	3.47	.43
OSU Reading Attitude Inventory	360.28	363.18	2.90	.05
Attendance 1969-70	156.65	164.14	7.49	.27
Days Absent 1969-70	11.75	10.35	-1.40	-.13

Figure 9

Grade 3, Ohio State/Columbus

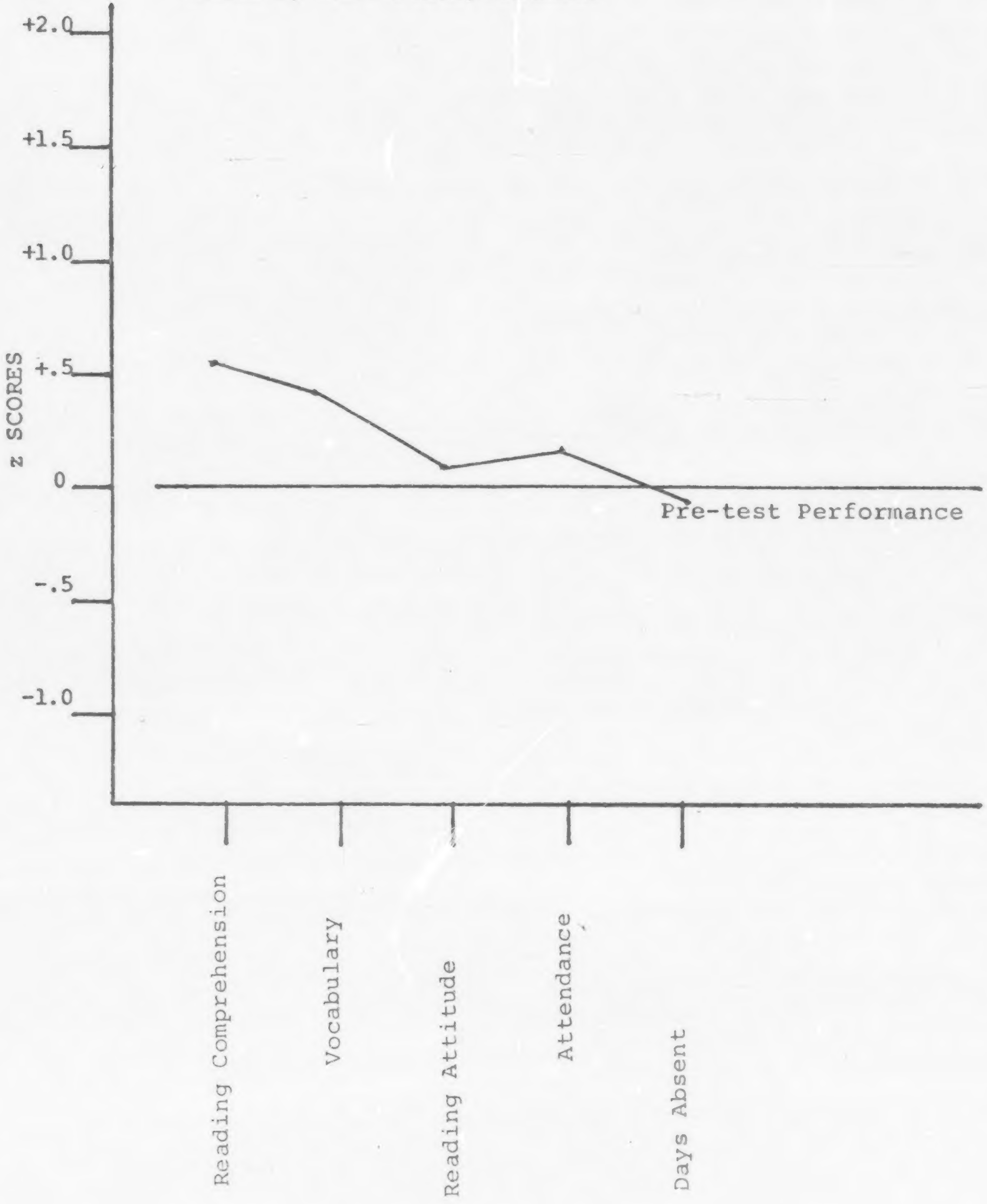


TABLE 10

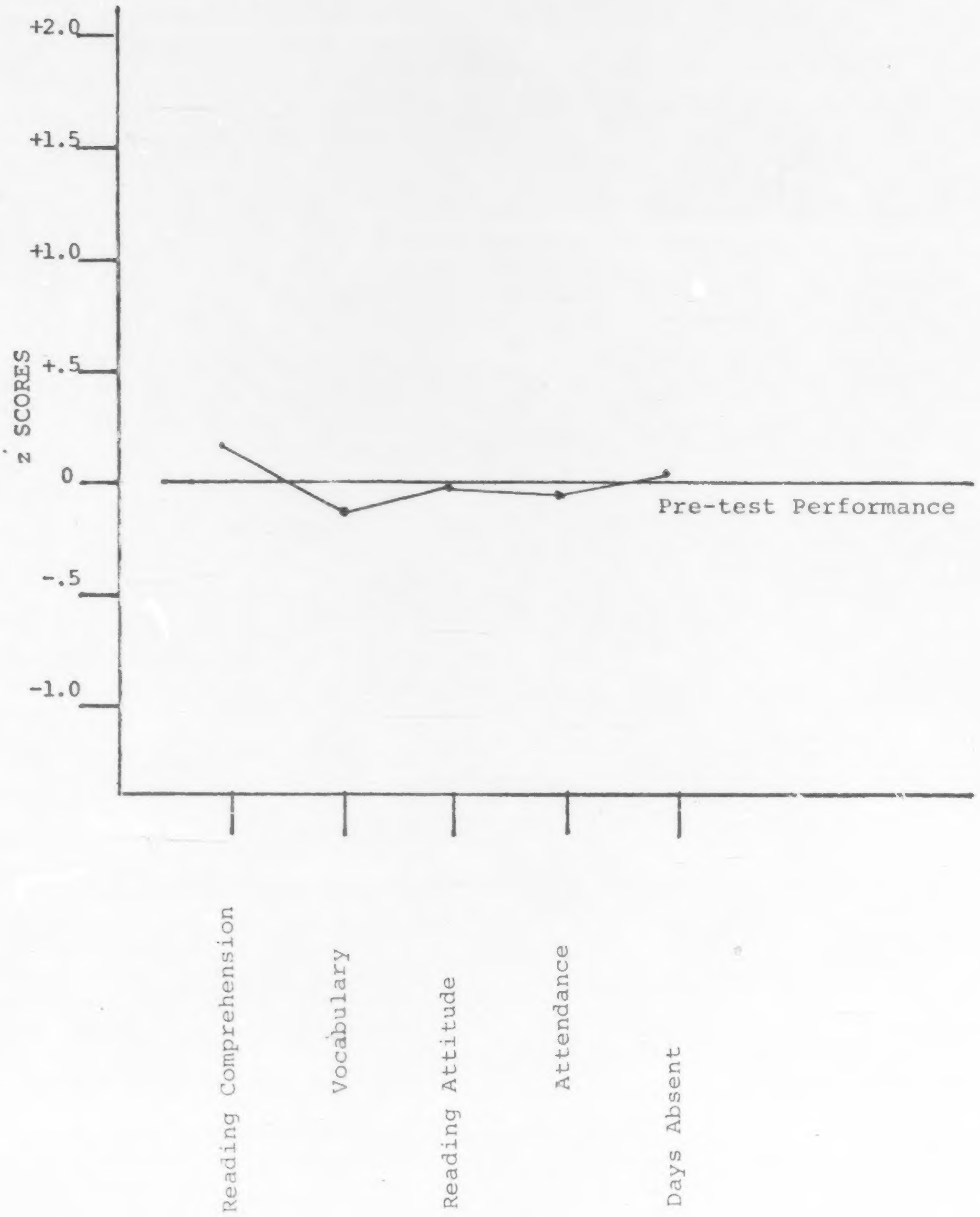
Grade 4 - Columbus/Ohio State

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Reading	14.28	15.74	1.46	.21
Vocabulary	14.26	13.56	-.70	-.10
OSU Reading Attitude Inventory	340.21	338.72	-1.49	-.02
Attendance 1969-70	166.57	165.15	-1.42	-.07
Days Absent 1969-70	10.57	10.82	.25	.02

Figure 10

Grade 4, Ohio State/Columbus



Chapel Hill/Seawell

Tables 11-14 present the mean pre- and post-test scores of students in grades 3-6 at the Seawell center. Average change scores and change scores presented in z score form are also included in these tables. Figure 11 presents the data contained in Table 11 in graphic format. The pre-test performance is presented as the baseline with the post-test performance plotted as deviations from the pre-test line. The standard deviation of the pre- and post-test groups was used as the basis for computing the z score deviations. It may be observed from Figure 11 that grade 3 students in the Seawell project earned higher mean scores on the post-test on each of the measures. It may also be observed that the greatest improvement was on the arithmetic computation with somewhat lower gain in z scores on the language arts related subscales.

Table 12 presents the same data fro the scales on which pre- and post-test data were available at grade 4. It may be observed that the students in the grade 4 Seawell project earned higher mean scores on the post-test on each of the measures. The greatest improvement was on the arithmetic computation with a somewhat lower gain in mean z score on the arithmetic concepts test.

Table 13 presents the mean scores on the pre- and post-test data of the students in grade 5 at the Seawell center. Higher gain scores may be observed in the word meaning, paragraph meaning, spelling, language, arithmetic concepts, arithmetic application, social studies and science tests with the greatest improvement in both language and arithmetic concepts and a lower mean gain score on the arithmetic computation test.

Table 14 presents the scores for grade 6, which reveals only modest improvement in word meaning, paragraph meaning, spelling, and arithmetic computation tests. Higher mean gain scores may be observed on the arithmetic concepts, arithmetic application, social studies and science tests, with the greatest improvement on the arithmetic concepts test.

TABLE 11

GRADE 3 - Seawell/LINC

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Word Meaning	30.90	41.05	10.15	.78
Paragraph Meaning	29.35	39.26	9.91	.68
Science and Social Studies	31.31	37.56	6.25	.50
Spelling	29.32	36.10	6.78	.52
Word Study Skills	29.74	33.02	3.28	.18
Language	31.88	40.54	8.66	.54
Arithmetic Computation	24.87	37.12	12.25	1.22
Arithmetic Concepts	31.24	38.80	7.56	.54

Figure 11

Grade 3 - Seawell/LINC

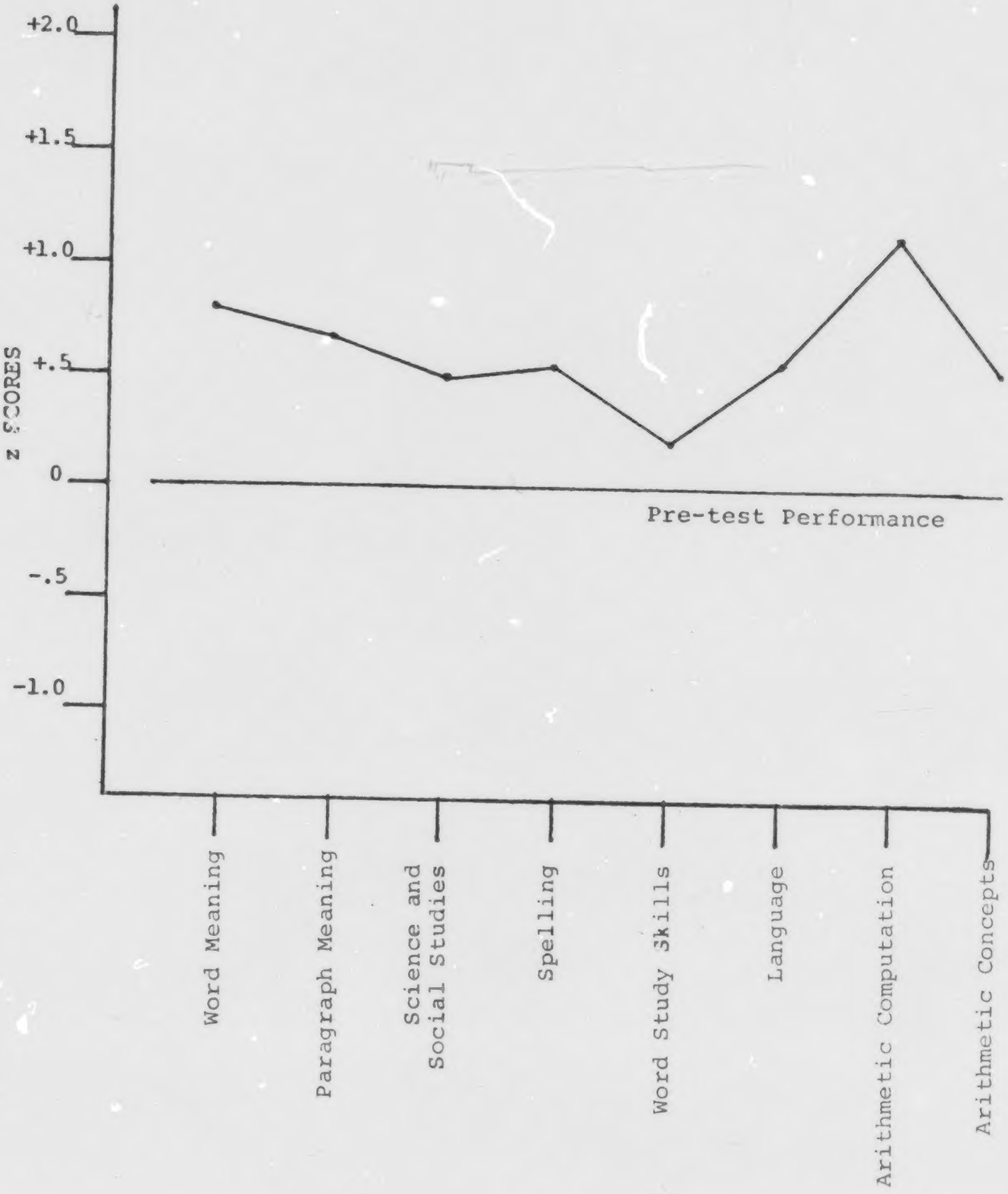


TABLE 12

GRADE 4 - Seawell/LINC

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Word Meaning	38.49	46.77	8.28	.63
Paragraph Meaning	39.65	48.23	8.58	.57
Spelling	39.19	46.10	6.91	.59
Arithmetic Computation	35.79	44.16	8.37	.77
Arithmetic Concepts	41.95	45.24	3.29	.22
Arithmetic Application	42.73	49.34	6.61	.44

Figure 12

Grade 4 - Seawell/LINC

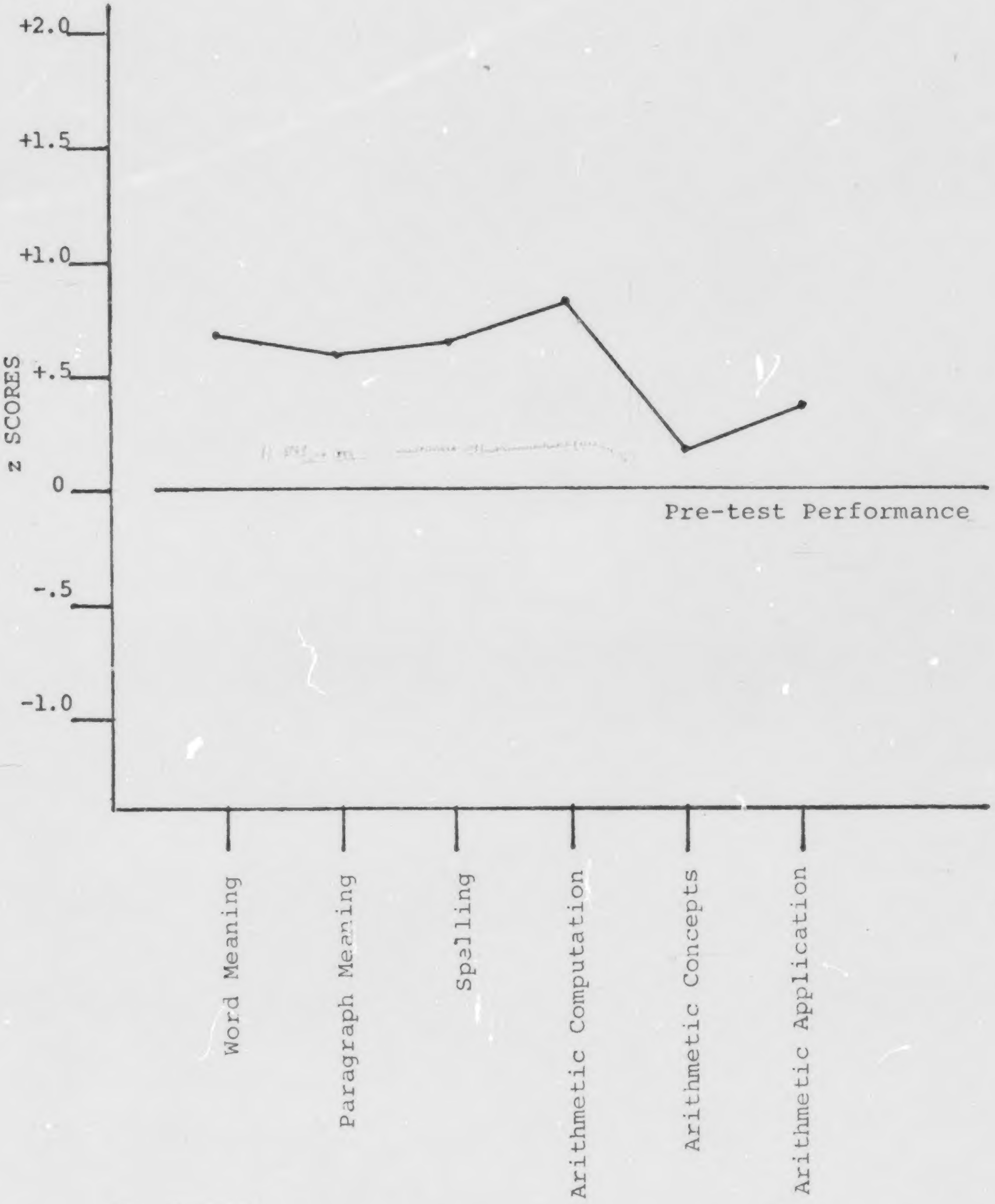


TABLE 13

GRADE 5 - Seawell/LINC

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Word Meaning	50.73	59.50	8.77	.46
Paragraph Meaning	46.30	56.66	10.36	.54
Spelling	49.61	56.29	6.68	.39
Language	45.69	57.04	18.03	.88
Arithmetic Computation	47.84	49.16	1.32	.08
Arithmetic Concepts	42.00	54.25	12.25	1.07
Arithmetic Application	48.19	53.33	5.14	.29
Social Studies	49.11	54.00	4.89	.31
Science	46.30	56.73	10.43	.59

Figure 13

Grade 5 - Seawell/LINC

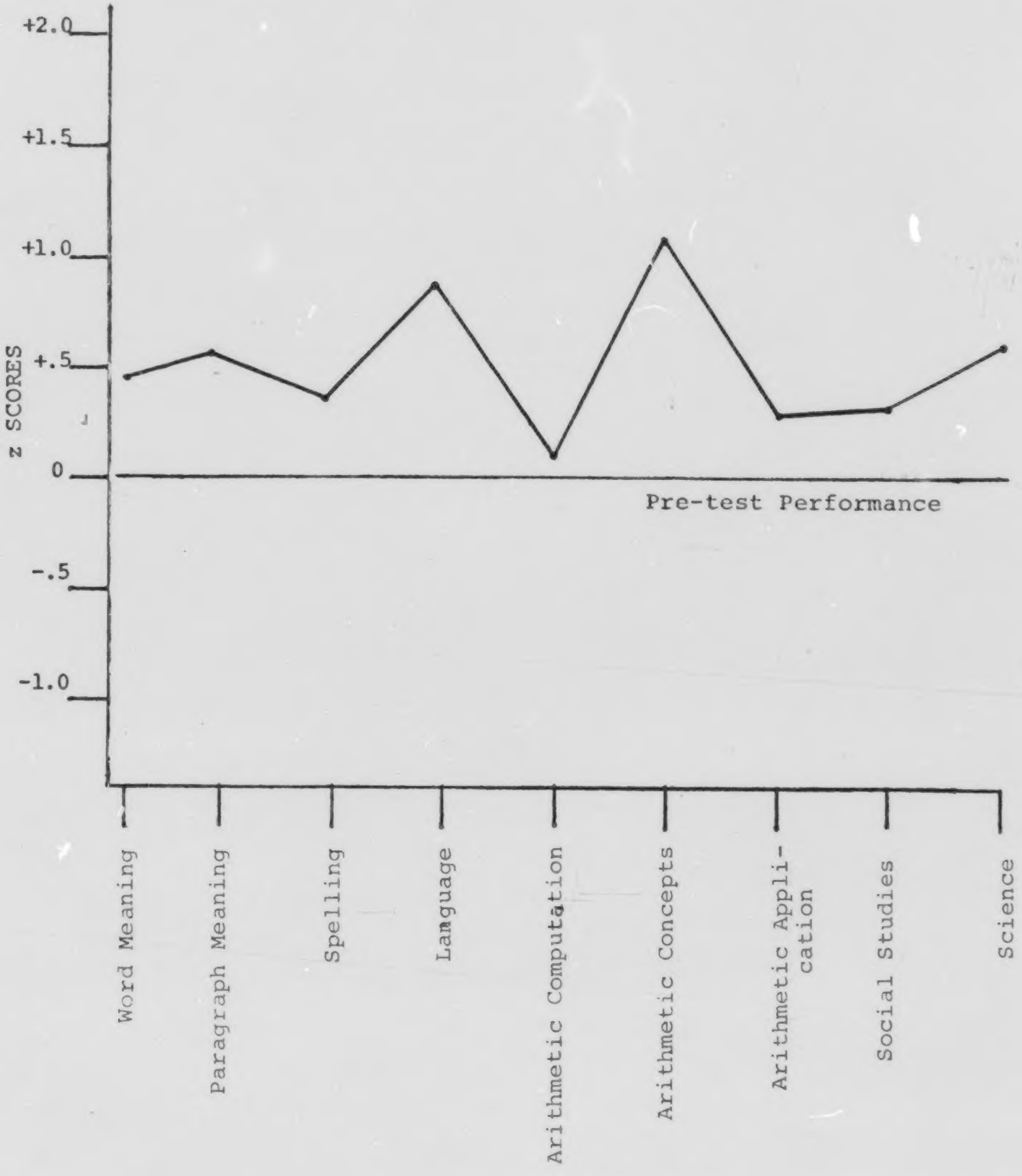


TABLE 14

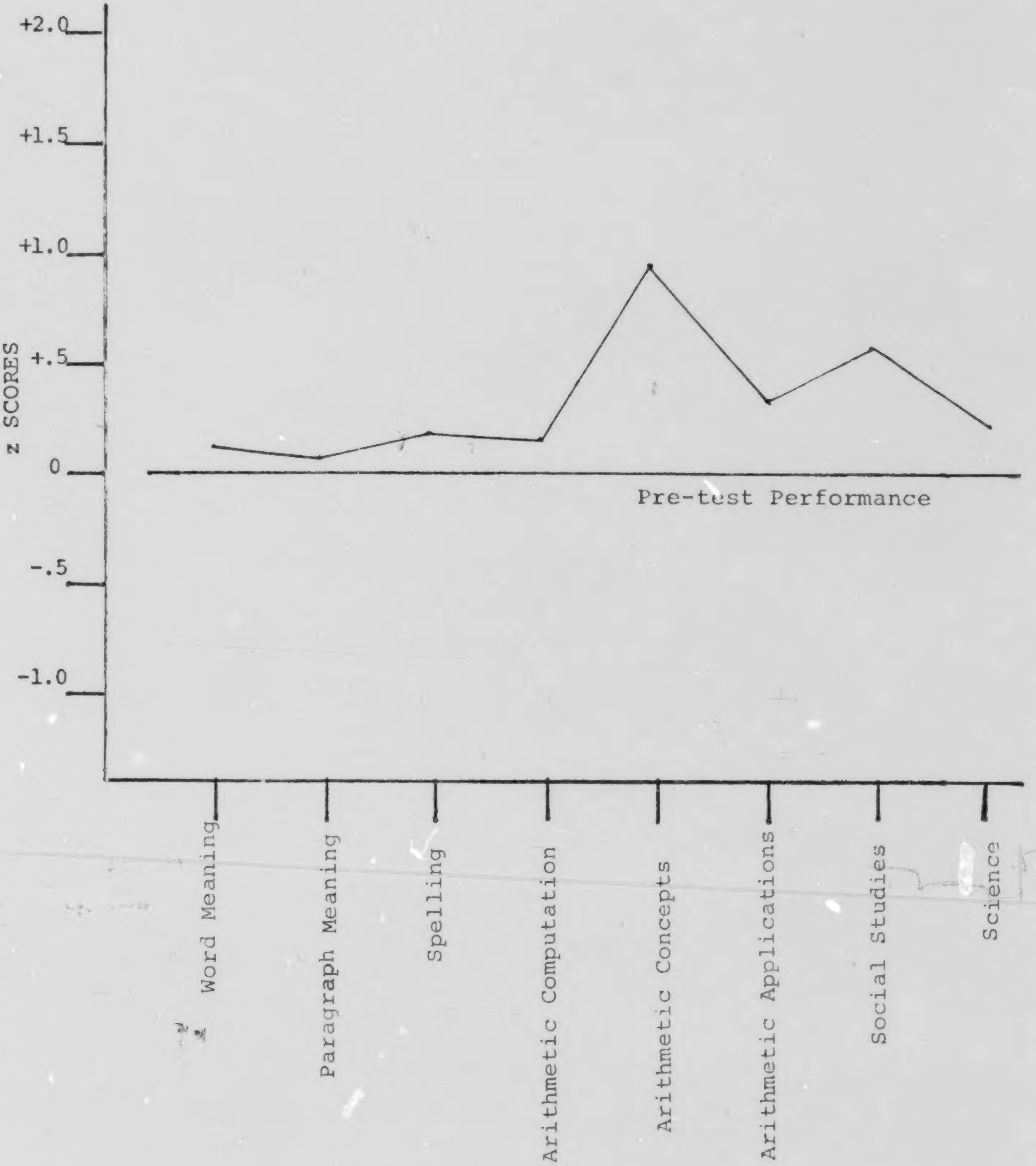
GRADE 6 - Seawell/LINC

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Word Meaning	68.78	71.91	3.13	.15
Paragraph Meaning	71.34	74.25	2.91	.11
Spelling	62.59	66.68	4.09	.21
Arithmetic Computation	61.59	65.31	3.72	.17
Arithmetic Concepts	50.94	65.63	14.69	.98
Arithmetic Applications	57.31	64.43	7.12	.37
Social Studies	56.03	68.97	12.94	.56
Science	67.12	71.91	4.79	.19

Figure 14

Grade 6 - Seawell/LINC



Berkeley/University of California

Tables 15-26 present the mean pre- and post-test scores of students in grade K-3 at the Berkeley center. Figures 15-18 correspond to the data from the special sample students and Figures 19-22 correspond to the students not in the special sample.

Figure 15 presents the scores from the Reading Readiness scale and the Average Number of Words scale for the kindergarten students in the special sample. It can be observed that there was gain on both measures with the greatest gain shown on reading readiness.

Figure 16 presents the first grade scores on the Reading Readiness and Average Number of Words scale on the same group. Improvement may be noted on the Reading Readiness scale, but not on the Average Number of Words scale.

Figure 17 shows the scores for the grade 2 students in the Special sample. It may be observed that there was improvement on all of the scales with greatest improvement on the ETS Primary Word Analysis scale and with the ETS Primary Reading scale and the Written Language Rating on Single Picture Sequence scale showing higher improvement than the other scales. The lowest improvement shown is on the Average Number of Words scale.

Figure 18 presents the data for the grade 3 students in the special sample. Again, it may be observed that improvement occurred on all the scales. The greatest improvement was on the Multiple Picture Sequence scale.

The following figures (19-22) represent the scores of the students not in the special sample. Figure 19 shows the gain for the kindergarten students not included in the special sample. It can easily be observed that there was good improvement on the Metropolitan Reading Readiness scale.

Figure 20 shows that the grade 1 students not in the special sample also had good improvement on the same scale.

Figure 21 presents the second grade data from this same group of students. Improvement may be noted on all the scales, with greatest improvement on the ETS Primary Reading scale and the least improvement on the ETS Primary Listening scale.

Figure 22 shows the data from the third grade students not involved in the special sample. It can be observed that there was good improvement on all three of the scales.

The last four figures combine all of the Berkeley project data to give an overall picture of all of the students involved; both those in the special sample and those not included in the special sample.

Figure 23 presents the kindergarten data. It can be noted that there was improvement on both scales with the greatest gain on the Metropolitan Reading Readiness scale.

Figure 24 shows that there was no gain for the Berkeley project first graders on the Average Number of Words scale, but there was good gain on the Metropolitan Reading Readiness scale.

Figure 25 presents the data for all of the Berkeley project grade 2 students, both special sample and non-special sample students. The data shows that the greatest gain for all of the second grade students was on the WLRS and the ETS Primary Reading scales with AVWDS scale showing almost no gain. There was some gain, however, on all the scales.

Figure 26 shows that there was improvement on all the scales for the Berkeley project third graders as a whole. The greatest improvement was on the Written Language Rating on Multiple Picture Sequence scale, and the least gain improvement was on the average number of words scale.

TABLE 15

KINDERGARTEN - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALES	Pre-Mean	Post-Mean	Change	z
Metropolitan Reading Readiness	40.78	59.92	19.14	1.01
Average Number of Words/ Communication Unit	58;20	59.93	1.73	.1131

* Special Sample

Figure 15

Kindergarten - Berkeley/UC

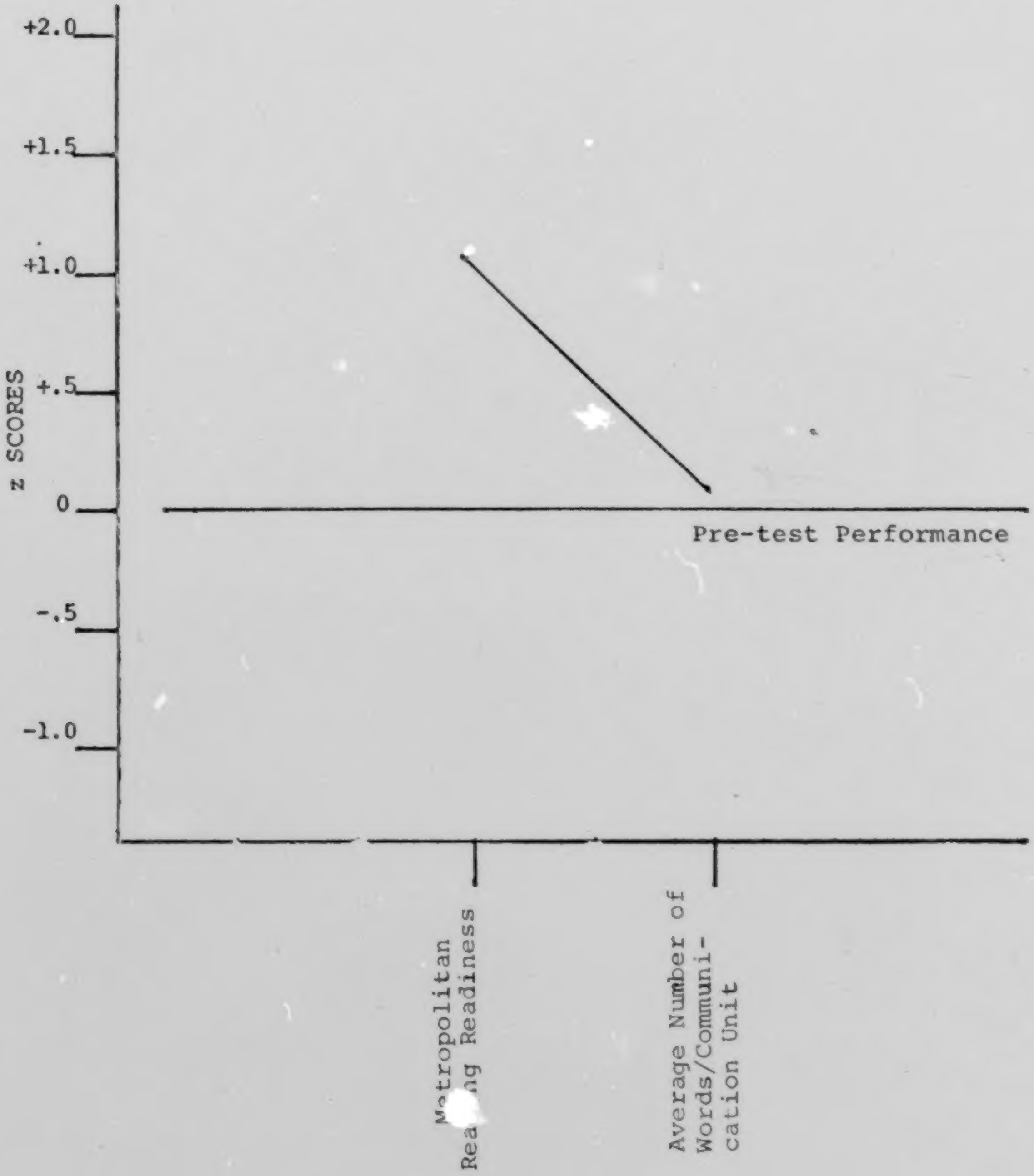


TABLE 16

GRADE 1 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Metropolitan Reading Readiness	72.62	85.55	12.93	1.15
Average Number of Words/ Communication Unit	65.17	64.30	-0.87	-.07

* Special Sample

Figure 16

Grade 1 - Berkeley/UC

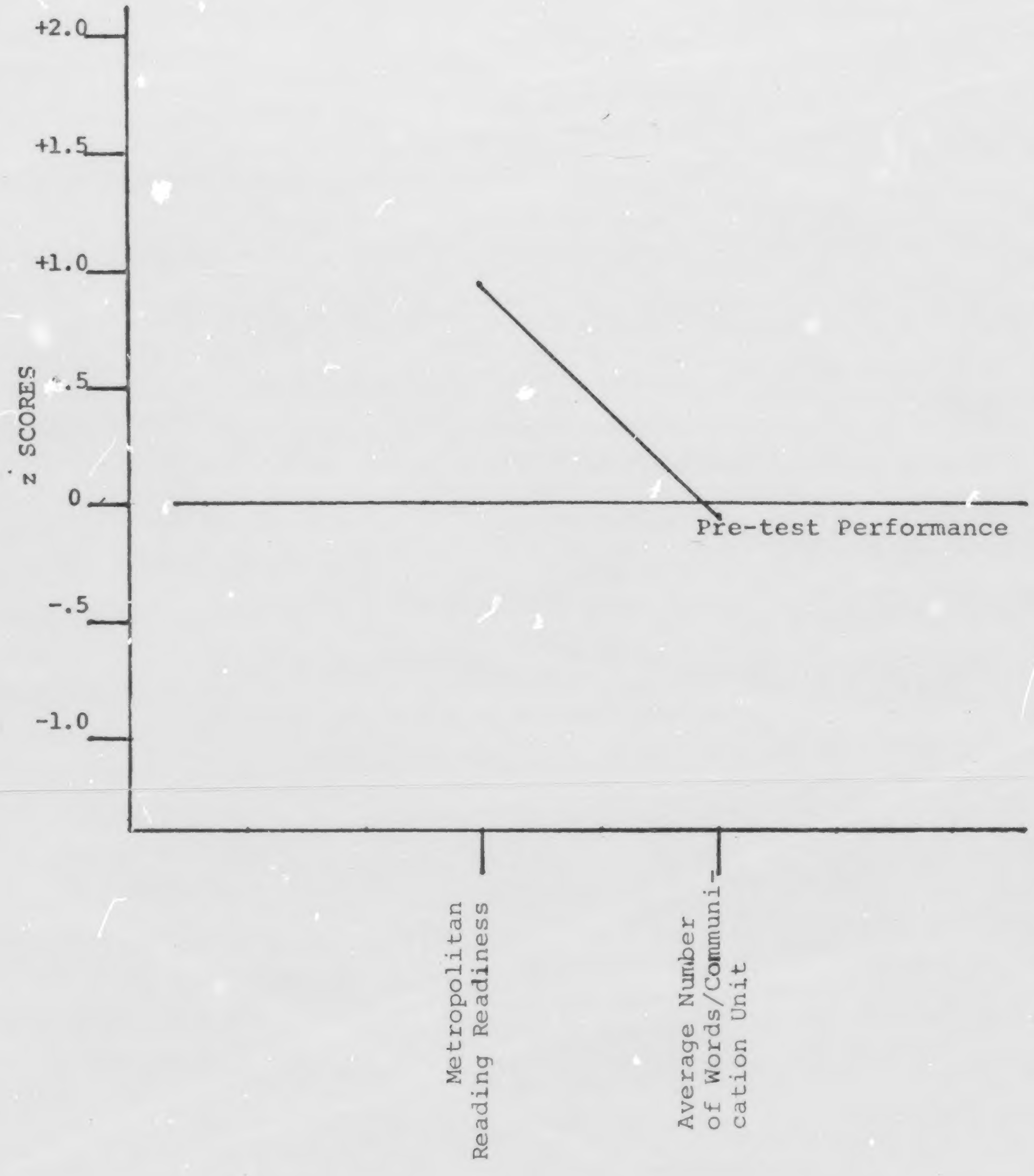


TABLE 17

GRADE 2 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Primary Reading	20.17	33.80	13.63	1.02
Primary Word Analysis	29.23	44.04	14.81	1.24
Average Number Words/ Communication Unit	65.33	66.13	0.80	.07
Primary Listening	37.37	40.84	3.47	.58
Written Language Rating on Single Picture Sequence	156.07	230.00	73.93	1.07
Written Language Rating on Multiple Picture Sequence	165.19	231.92	66.73	.81

---

* Special Sample

Figure 17

Grade 2 - Berkeley/UC

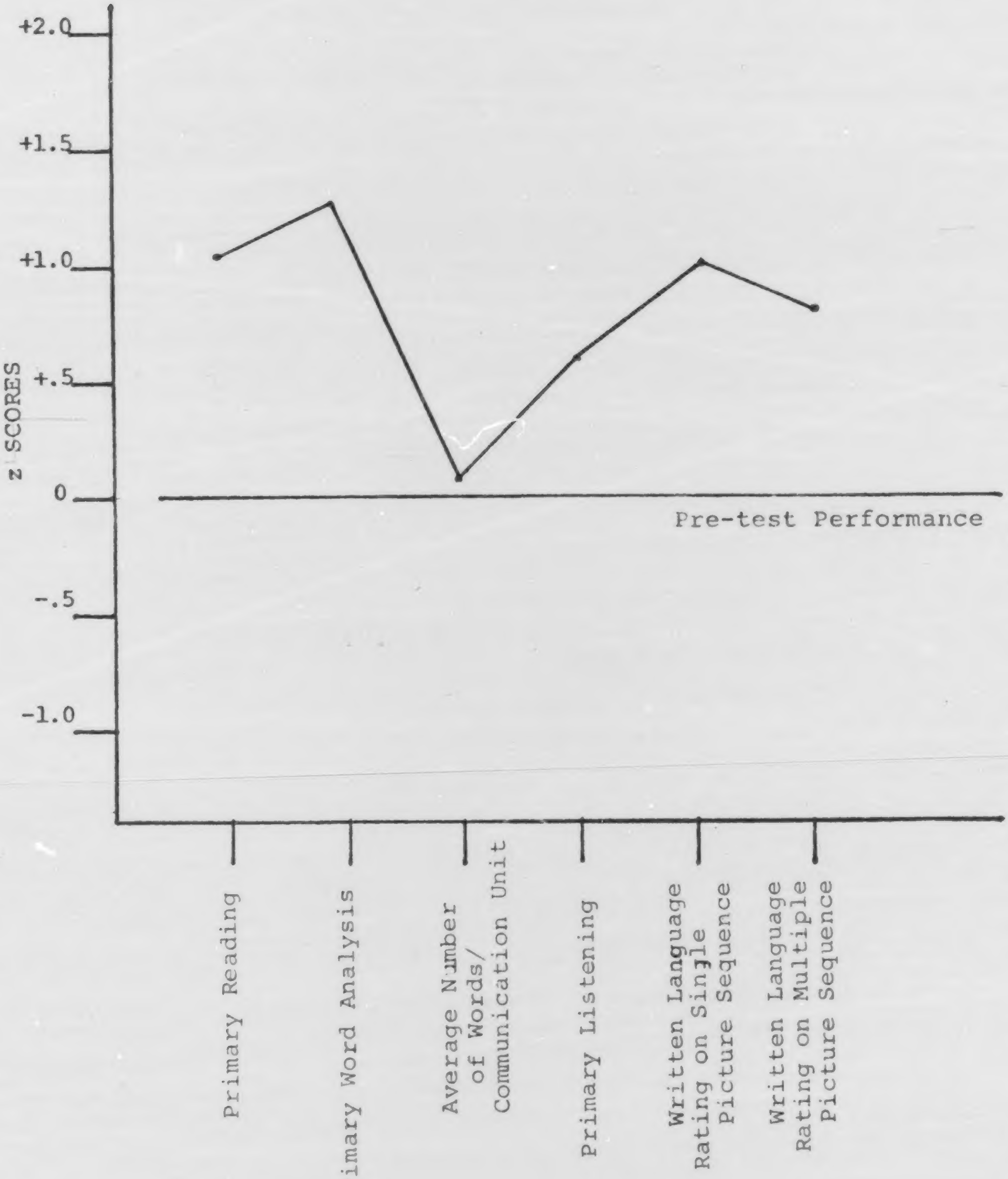


TABLE 18

GRADE 3 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Primary Reading	30.22	33.89	3.67	.30
Primary Word Analysis	45.84	50.62	4.78	.47
Average Number Words/ Communication Unit	70.37	76.43	6.06	.49
Primary Listening	32.27	37.88	5.61	.82
Written Language Rating on Single Picture Sequence	236.07	323.33	87.26	.87
Written Language Rating on Multiple Picture Sequence	248.15	336.67	88.52	.94

* Special Sample

Figure 18

Grade 3 - Berkeley/UC

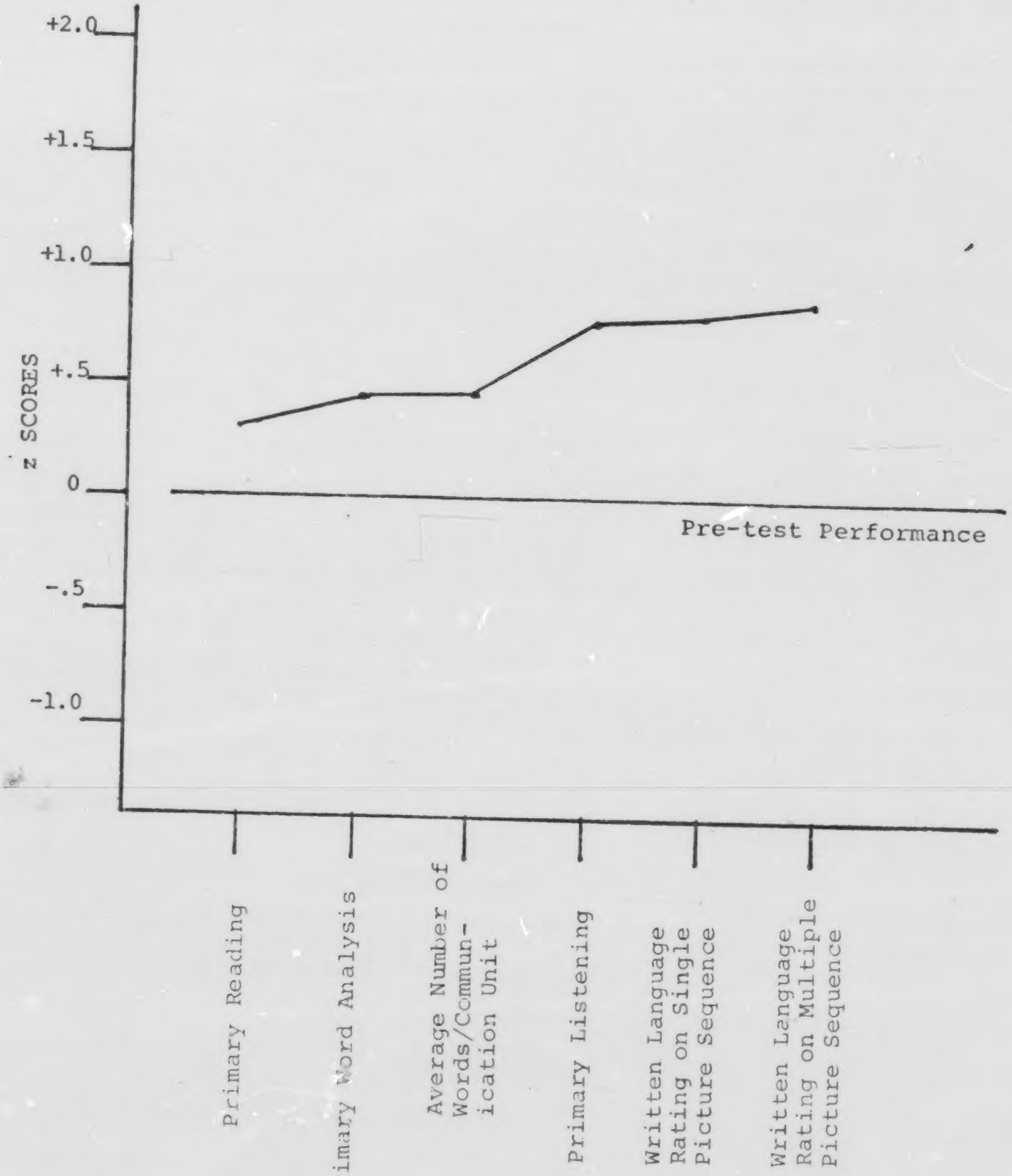


TABLE 19

KINDERGARTEN - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Metropolitan Reading Readiness	48.36	63.11	14.75	.80

* Non Special Sample

Figure 19

Kindergarten - Berkeley/UC

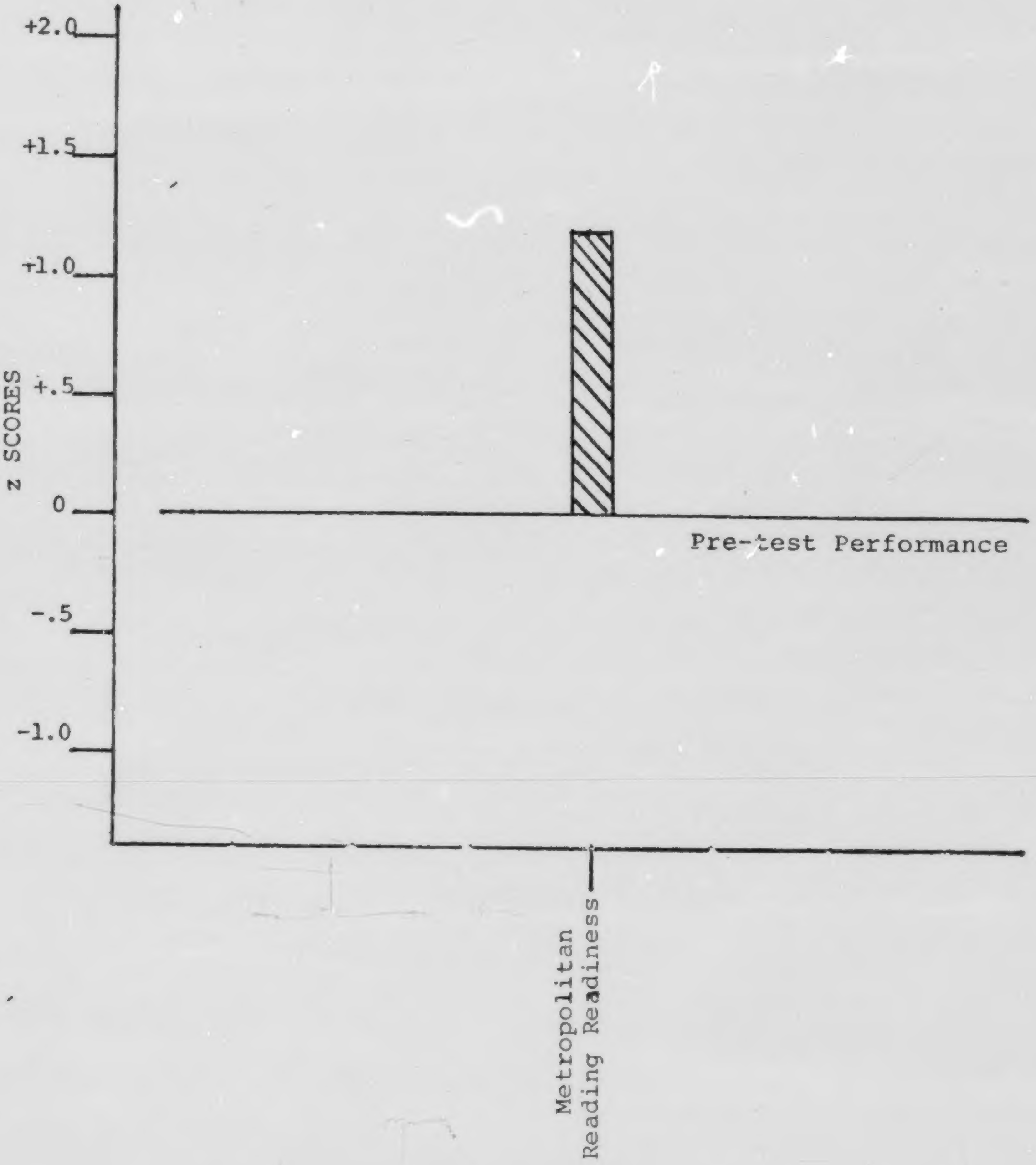


TABLE 20

GRADE 1 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Metropolitan Reading Readiness	65.12	78.75	13.63	.96

---

* Non Special Sample

Figure 20

Grade 1 - Berkeley/UC

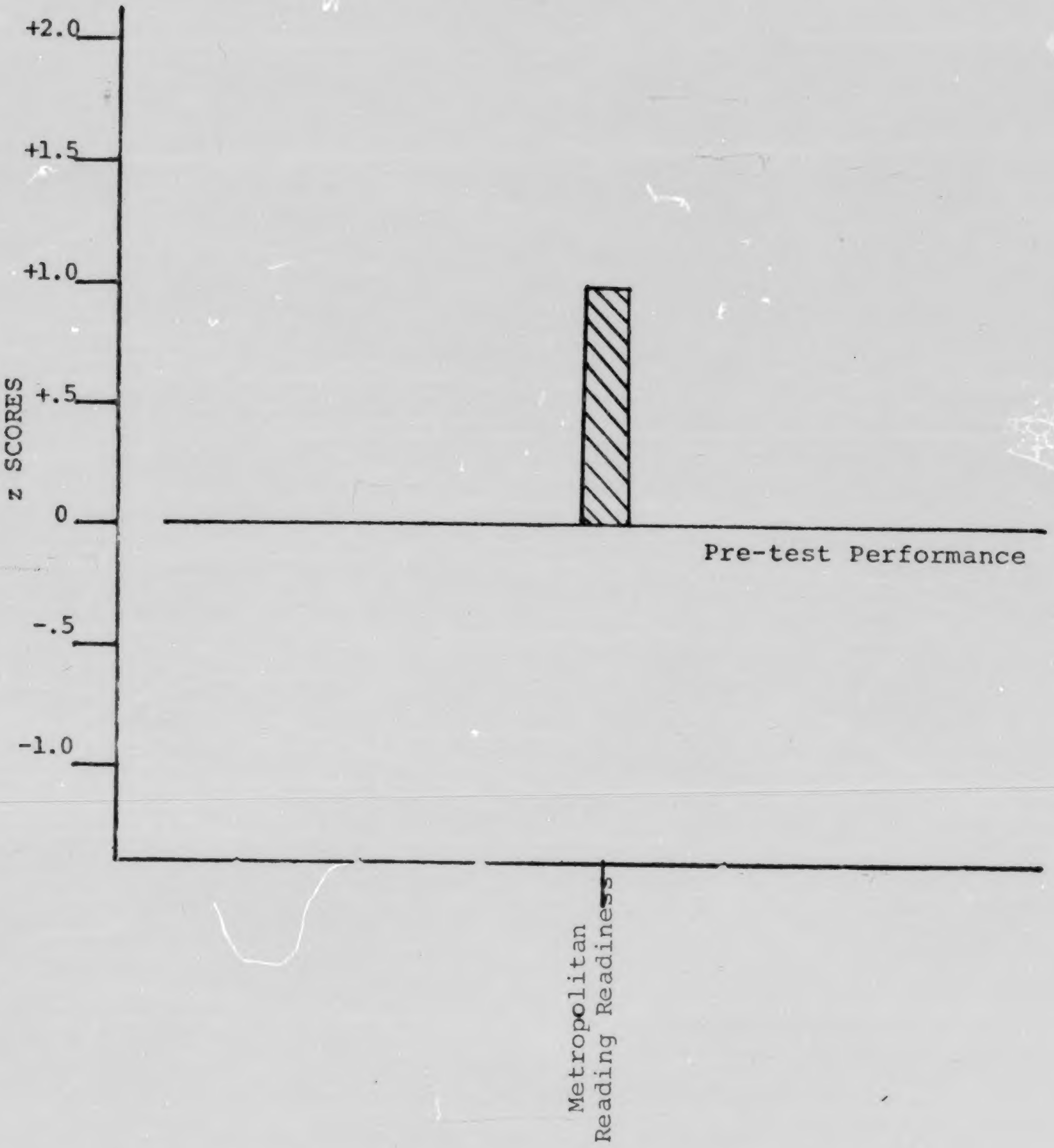


TABLE 21

GRADE 2 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Primary Reading	23.07	36.14	13.07	1.07
Primary Word Analysis	33.78	42.78	9.00	.74
Primary Listening	36.45	38.41	1.96	.27

* Non Special Sample

Figure 21

Grade 2 - Berkeley/UC

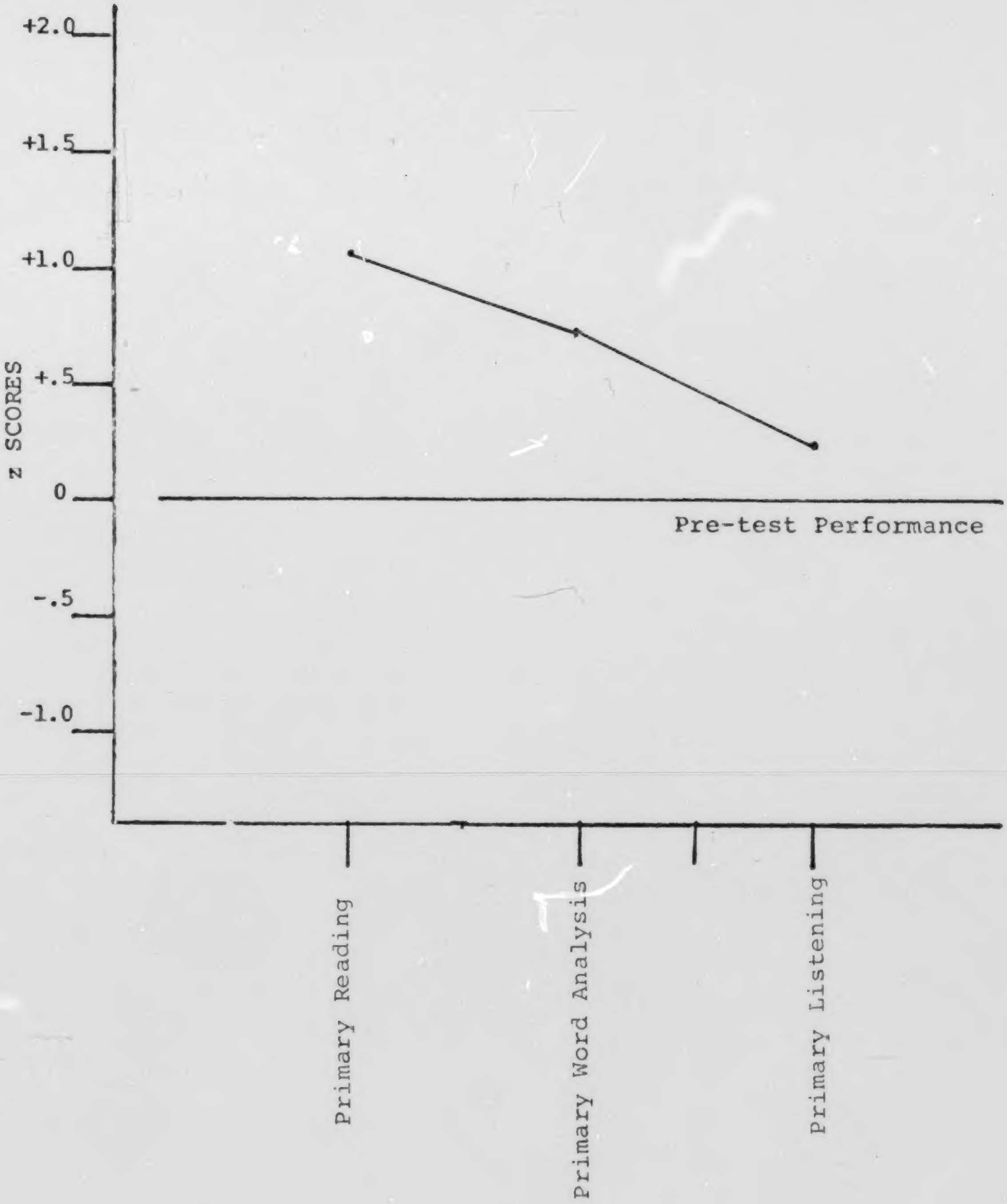


TABLE 22

GRADE 3 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Primary Reading	24.99	35.02	10.03	.95
Primary Word Analysis	41.12	49.78	8.66	.89
Primary Listening	31.57	36.13	4.56	.61

* Non Special Sample

Figure 22

Grade 3 - Berkeley/UC

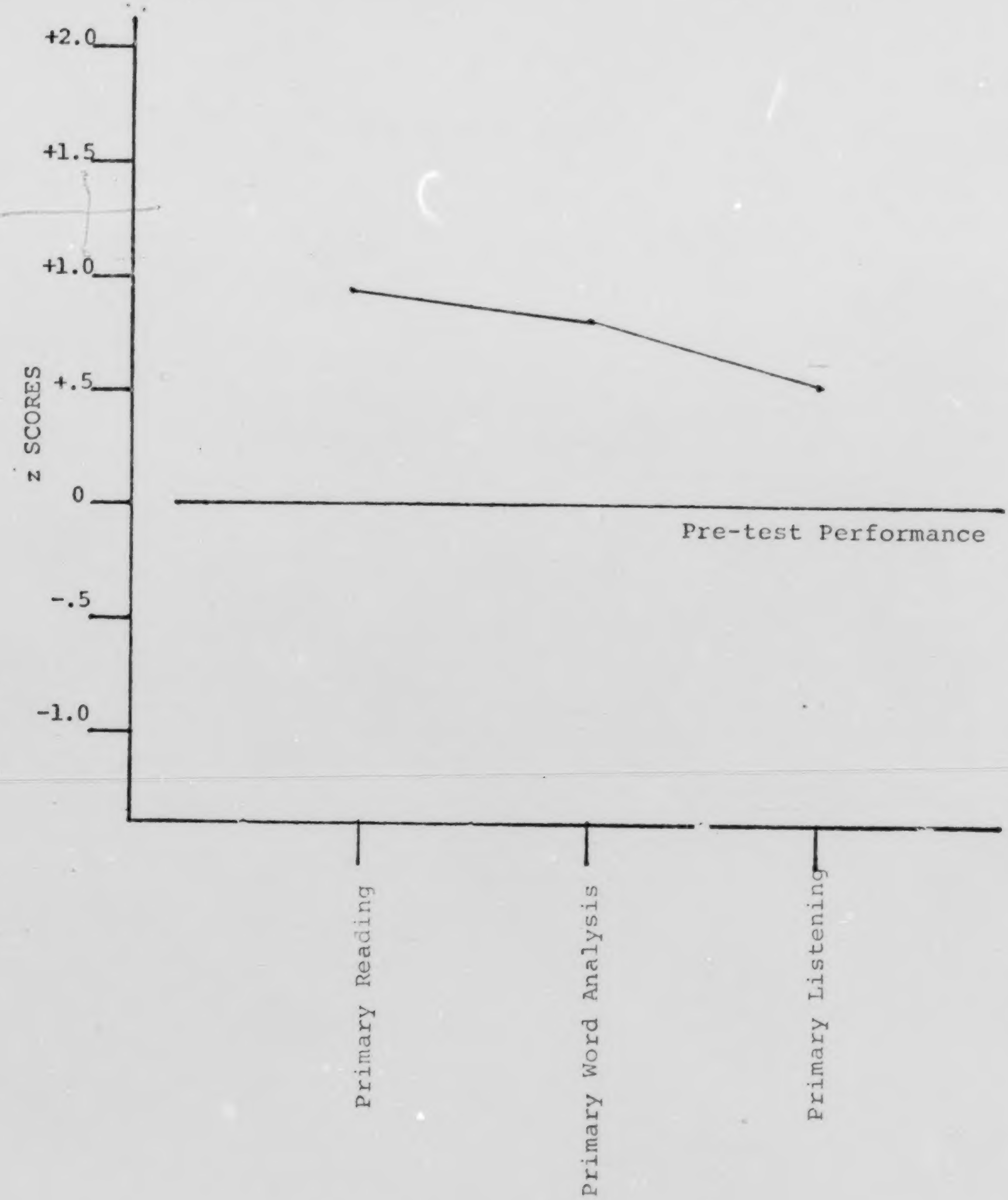


TABLE 23

KINDERGARTEN - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Scores

SUBSCALE	Pre-Mean	Post-Mean	Changes	z
Metropolitan Reading Readiness	46.29	62.21	15.92	.85
Average Number of Words/ Communication Unit	58.20	59.93	1.73	.11

* Total Sample

Figure 23

Kindergarten - Berkeley/UC

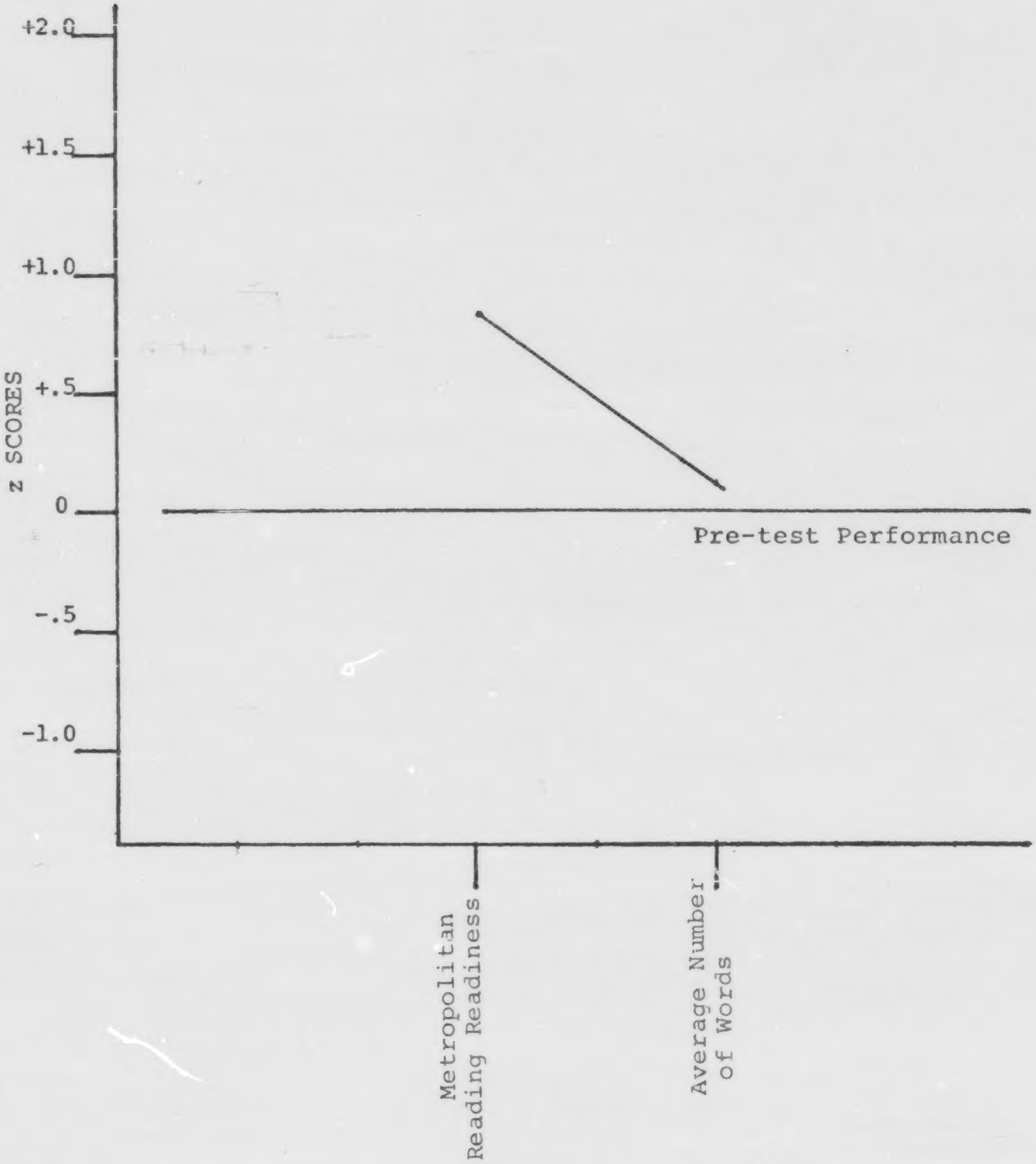


TABLE 24

GRADE 1 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Score

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Metropolitan Reading Readiness	67.03	80.62	13.59	.98
Average Number of Words/ Communication Unit	65.17	64.30	-.87	-.07

* Total Sample

Figure 24

Grade 1 - Berkeley/UC

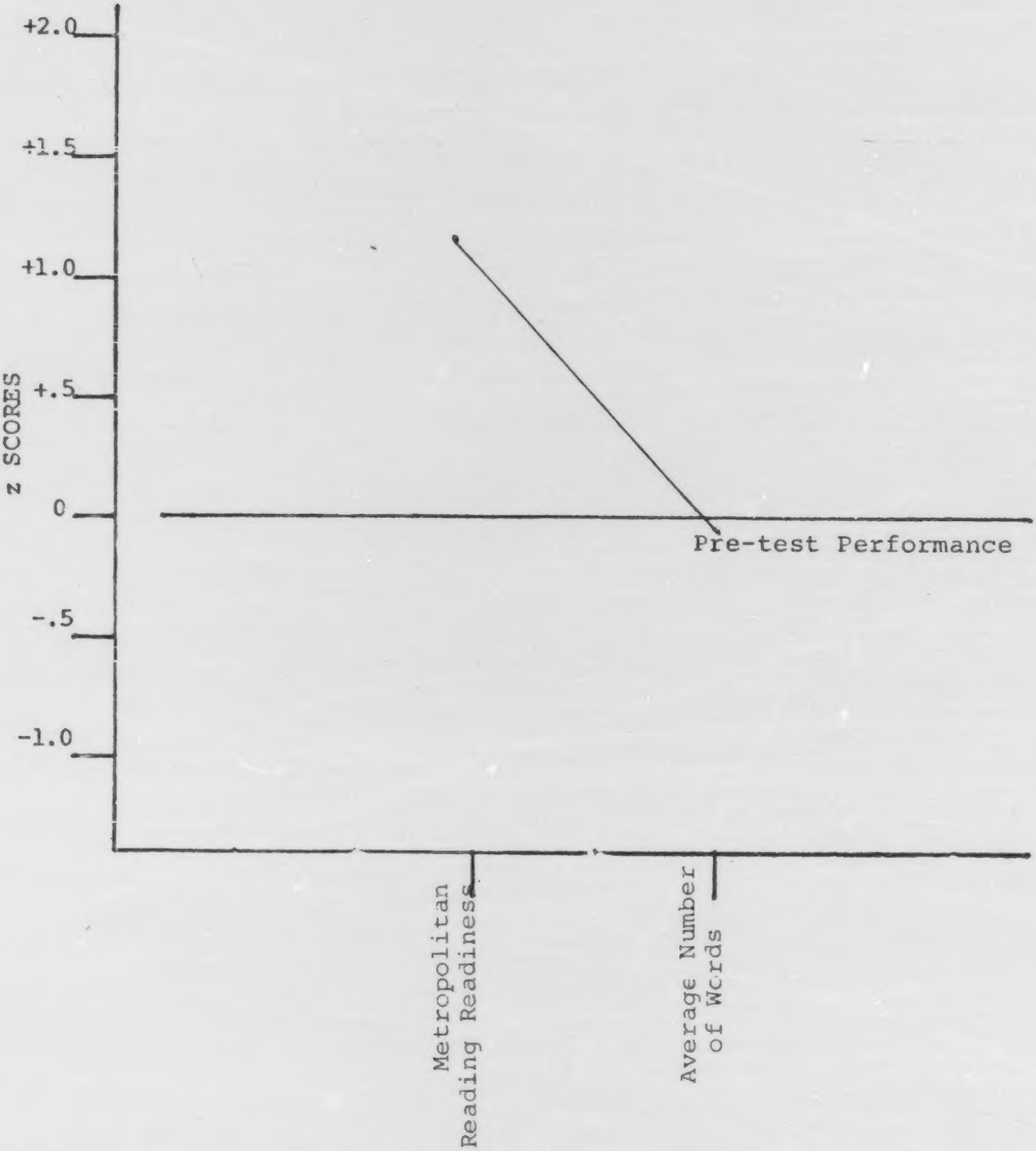


TABLE 25

Grade 2 - Berkeley/UC *

Pre-Mean, Post-Mean, Change and z Score

SUBSCALE	Pre-Mean	Post-Mean	Change	z
Primary Reading	22.23	35.54	13.31	1.06
Primary Word Analysis	32.46	43.09	10.63	.87
Average Number of Words/ Communication Unit	65.33	66.13	0.80	.07
Primary Listening	36.70	39.00	2.30	.33
Written Language Rating on Single Picture Sequence	156.07	230.00	73.93	1.07
Written Language Rating on Multiple Picture Sequence	165.16	231.92	66.76	.81

* Total Sample

Figure 25

Grade 2 - Berkeley/UC

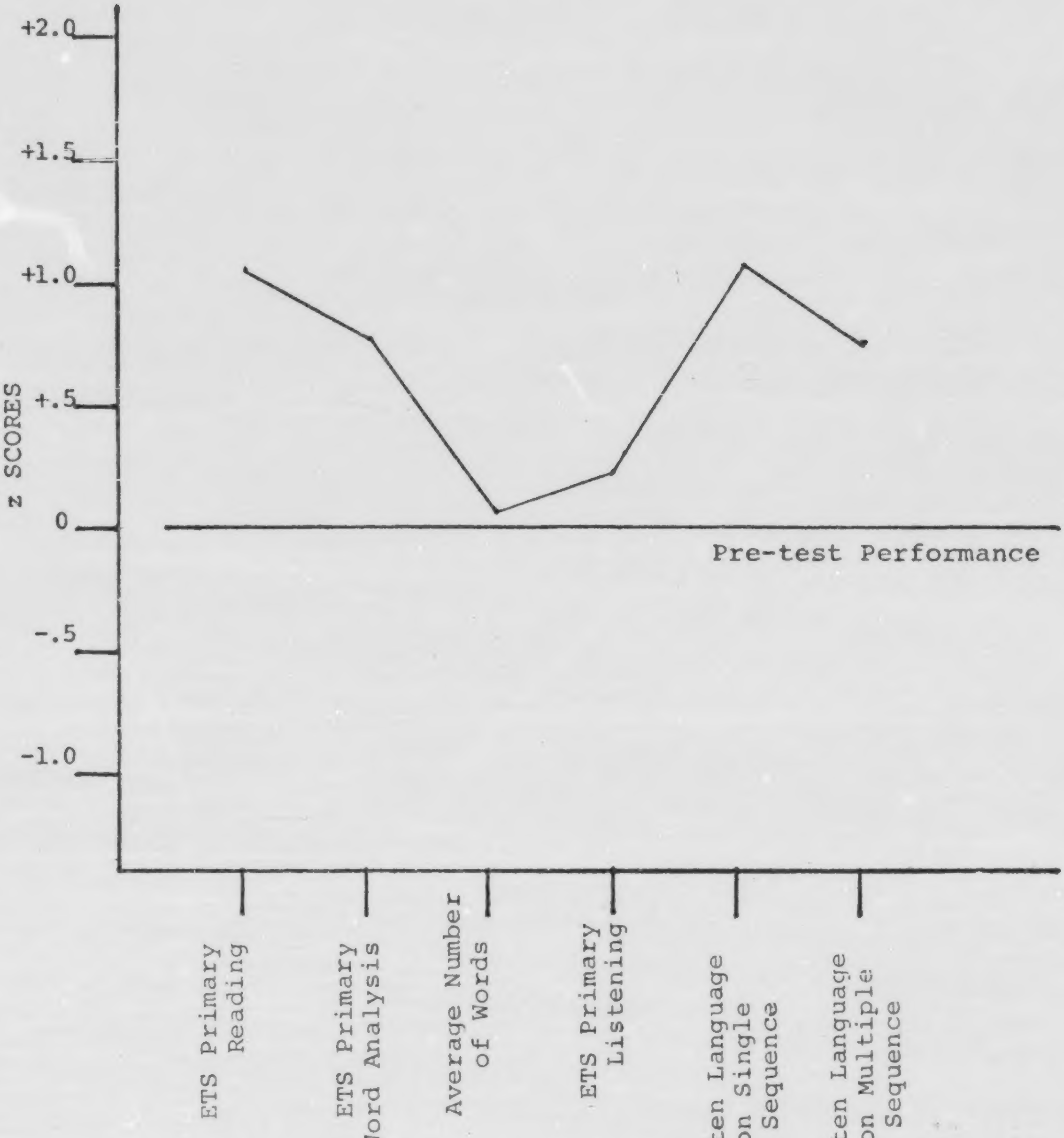


TABLE 26

GRADE 3 - Berkeley/UC *

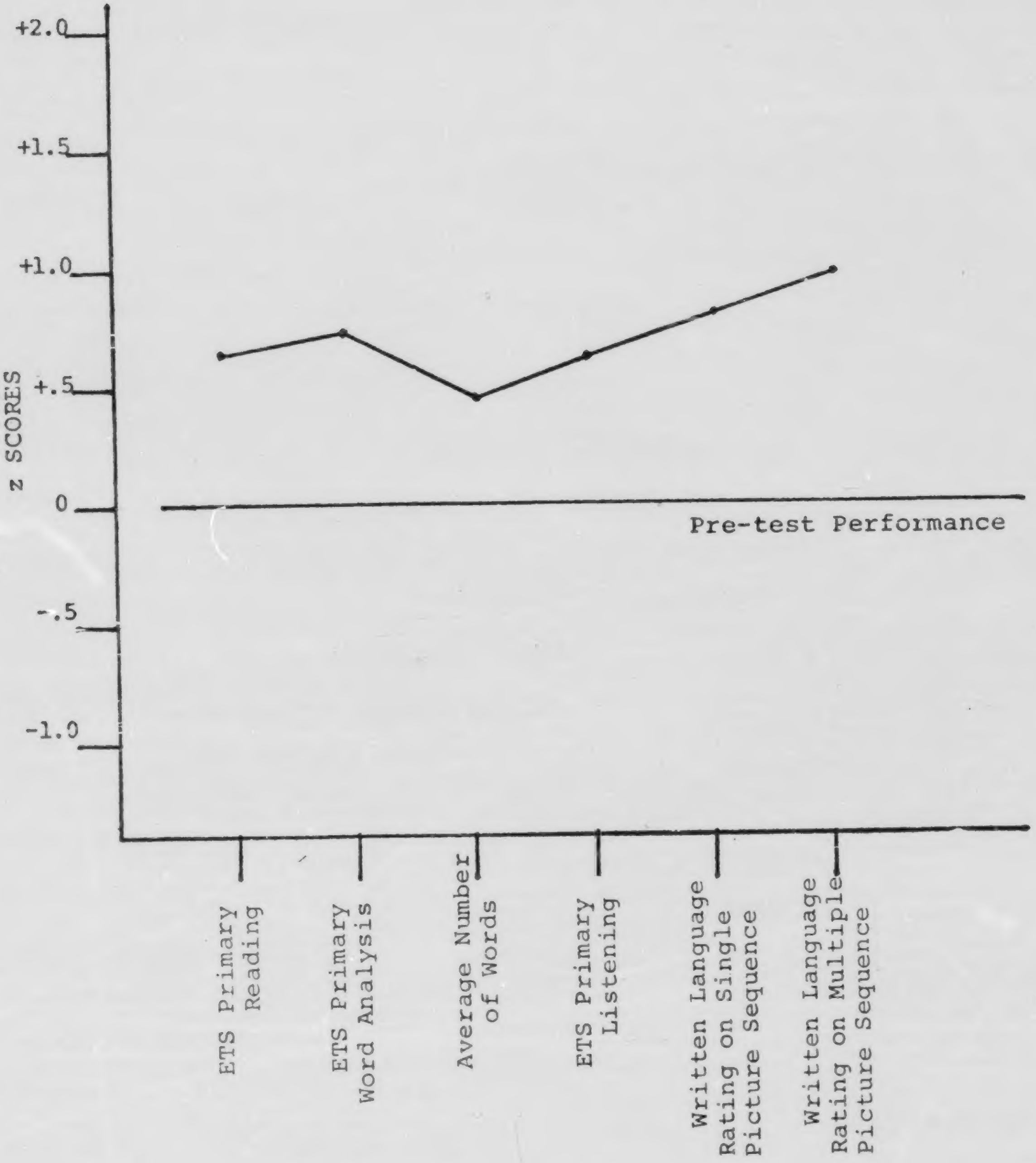
Pre-Mean, Post-Mean, Change and z Scores

SUBSCALES	Pre-Mean	Post-Mean	Change	z
Primary Reading	26.17	34.74	8.57	.11
Primary Word Analysis	42.20	49.97	7.77	.79
Average Number of Words/ Communication Unit	70.37	76.43	6.06	.49
Primary Listening	31.72	36.52	4.80	.65
Written Language Rating on Single Picture Sequence	236.07	323.33	87.26	.87
Written Language Rating on Multiple Picture Sequence	248.15	336.67	88.52	.94

* Total Sample

Figure 26

Grade 3 - Berkeley/UC



CHAPTER VII

SUMMARY, ACCOMPLISHMENTS AND CONCLUSION

CHAPTER VII

SUMMARY, ACCOMPLISHMENTS AND CONCLUSION

Specialized Educational Consultant Services, Inc., acted as contracted evaluation agency for the National Council of Teachers of English to coordinate a national evaluation of five language arts/reading model training centers. These centers were financed by the United States Office of Education division of Professional Educational Development Act through NCTE. Centers were operated cooperatively between public schools and nearby universities except for the Chapel Hill center which operated jointly with the Learning Institute of North Carolina. Other centers were:

Berkeley - University of California
Portland - Portland State University
Columbus - Ohio State University
Philadelphia - Temple University

Each of the five centers had goals and objectives which differed from the goals and objectives of the other centers. For this reason the use of a standard pre-post examination schedule across projects was not considered feasible.

The evaluation strategy called for an analysis of within center pre-post pupil achievement (this was complete in all but one center) and analysis of behavioral change in teacher practices and attitudes toward the communication skills areas and toward the projects, a report from each project director (three directors responded to our request) and site visitation by members of the evaluation team to each center. These methodologies must be considered as providing descriptive data from which evaluative inferences may be made by persons concerned with the projects.

Each center had its special characteristics which reflected the concerns and objectives which characterized the individual projects. The Ohio State University-Columbus program seemed to us to provide the most innovative techniques for teaching and learning in the communication skills. Berkeley-University of California developed a research personality for the area of measurement, evaluation and research. Among the five centers Berkeley certainly worked harder and accomplished more in this total research area of language arts/reading. The Seawell Project in Chapel Hill, North Carolina, seemed to have the most effective model for inservice education and outreach to teachers on-the-job in nearby schools. The on-campus program and the follow-up supervision for teachers in the project seemed to stand out in Portland along with the emphasis given parents as paraprofessionals in the program. Teachers that attended classes on the Portland State University campus were given a multitude of ideas for teaching reading and language arts. Philadelphia undertook a most difficult task: upgrading the language arts/reading opportunities and skills of ghetto children. Philadelphia had an outstanding program of parent involvement, certainly this would be rated among its strengths, along with the efforts made to use an experimental program of communication and reading skills for disadvantaged children.

Reports from the project directors indicated their sense of reality in dealing with projects of this type. They seemed to be able to put their projects into proper focus with relation to the school community and the university community. Project directors appeared to be able to find a balance between good and innovative programs for children and effective training programs for teachers without either operating to the detrement of the other. They, further, had the foresight and the leadership skills necessary to balance national project goals, with goals for their individual project.

Although the project directors included all of the national goals in their programs, in practice they tended to place special focus on one goal. This special emphasis may not have been an overt action; however, the directors' reports support these findings.

Results of the Teacher Practices and Attitude Survey indicated that Chapel Hill, Columbus and Portland had relatively high and homogeneous scores when compared to Philadelphia and Portland at the time of the pre-administration of the survey. All centers, except Berkeley, declined in their positive attitude by the spring of 1971. The attitude of the Berkeley participants at the close of the program were more positive, that is they strongly agreed with more items. The Philadelphia and Portland centers showed the greatest use of the variety language arts/reading practices surveyed at both the beginning and the end of the program. Both Berkeley and Chapel Hill showed less frequent use of the practices at the end of the project than at the beginning. The Columbus participants showed relatively no change in the frequency with which they implemented the practices surveyed.

The decline in positive attitudes is not surprising, teachers will have a more positive feeling toward their environment after returning from a summer vacation than after dealing with the problems of education and learning for nine months.

The analysis of pupil performance data was the most complex problem. Philadelphia showed significant gains in all achievement areas with the reading comprehension showing the least gain among the achievement variables. Student's attitudes, however, showed little or no positive change. Columbus pupil performance followed a similar pattern with clear gains in each subscale with reading comprehension and vocabulary showing the most significant gains. Again, there was no positive change in the attitude of the pupils as measured by their instrument. Chapel Hill did not use an attitude measure; in achievement, however, except for grade six there were significant positive gains in all language arts related subscales. Berkeley students, overall, showed significant positive gains in language related areas especially the primary reading, word analysis and listening. The Berkeley special sample, who were involved in more extensive measures showed good gains overall except in the "Words Per Communication Unit."

Given the constraint of no comparison control group, and the inability to draw many assumptions across a variety of test data, we feel justified in concluding that students enrolled in the four of the five centers (Portland was not involved) showed significant positive gains on achievement tests, especially in the language arts and reading subscales which were administered. Students', as well as teachers', attitudes did not show such gains.

APPENDIX A

ORIGINAL EVALUATION DESIGN FOR THE COORDINATED EVALUATION

Specs SPECIALIZED EDUCATIONAL CONSULTANT SERVICES
Box 6145 College Station, Durham, N.C. 27708

A Proposal
for
The Coordinated Evaluation
# of the
Five Language/Reading Centers

A Joint Project
of the
National Council of Teachers of English
and
The United States Office of Education

by
Hugh I. Peck
William G. Katzenmeyer

A PROPOSAL FOR THE EVALUATION OF THE FIVE LANGUAGE/READING CENTERS SPONSORED BY THE NATIONAL COUNCIL OF TEACHERS OF ENGLISH AND THE U.S. OFFICE OF EDUCATION (EDUCATIONAL PROFESSIONS DEVELOPMENT ACT)

The National Council of Teachers of English and the USOE are coordinating efforts to establish five language/reading centers throughout the United States. Centers are being established in Berkeley, California; Portland, Oregon, Columbus, Ohio; Chapel Hill, North Carolina; and Philadelphis, Pennsylvania. Although each center is responsible for evaluating the effectiveness of its efforts, it is felt that a coordinated evaluation of all five projects would be of additional value and would support requests to continue the centers.

The coordinated evaluation effort poses the following basic goals concerning the effectiveness of the reading centers:

1. To determine if the efforts of the centers increase the performance of students--e.g., as measured by the standardized achievement tests.
2. To determine which individual activities in the various centers hold the greatest promise for broad application.
3. To determine which of the approaches utilized at the various centers toward the realization of a particular objective has the greatest yield per dollar invested.
4. To determine if the efforts of the centers are effective in systematically reaching more teachers. (Are the centers getting the greatest exposure for the dollar?)
5. To determine if the centers are able to change teacher behavior in a desirable direction.

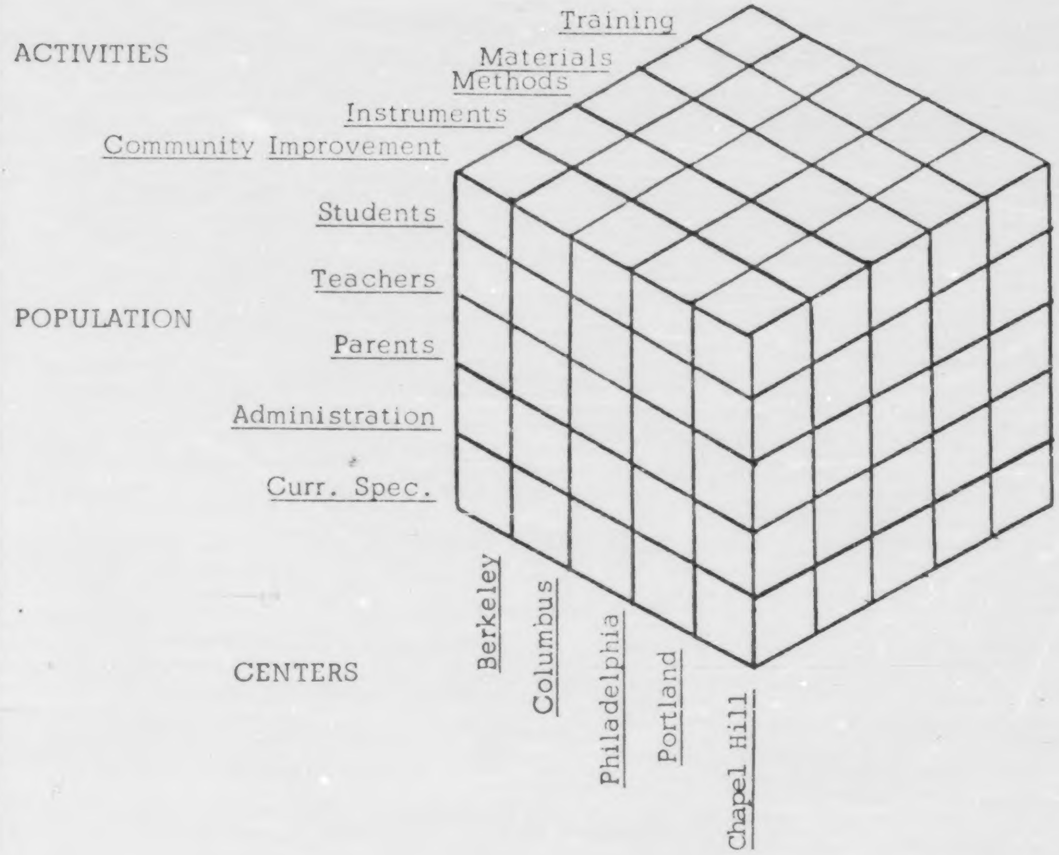
6. To determine if the centers foster inter-institutional cooperation both within the sponsoring agency and between agencies that are cooperating.
7. To determine if the centers are able to provide new materials and methods or new uses for the existing ones.

The following chart presents some summary data concerning the centers.

	Berk.	Col.	Phila.	Port.	Chap.Hl.
Number of Schools	1	2	2	4	1
Grade Levels	K-3	Pre K-3	K-6	1-8	1-6
Number of Students	600	600	900	200	350
Number of Teachers	25	25	57	32	(Team input)
Number of Administrators	2	2	2	4	
Number of Curr. Spec.	4	3	4	8	
Number of Paraprofessionals	4		12	14	3
Number of Professional Staff (full-time equivalent)	10	5	7	4	12
			Parents 60		

While relative emphasis varies between centers, five types of activities are included. The five activities are: (1) teacher and staff training (both pre-service and in-service), (2) community and parent involvement, (3) development of instrumentation, (4) develop and use of materials, (5) the development and application of methodology. Each center is working to varying degrees with five identifiable populations: students, teachers, parents, administrators, and curriculum specialists.

The following model may help to visualize the scheme of the NCTE project.


ACTIVITIES
Training
Materials
Methods
Instruments
Community Improvement
POPULATION
Students
Teachers
Parents
Administration
Curr. Spec.
CENTERS
Berkeley
Columbus
Philadelphia
Portland
Chapel Hill

One of the most sensitive areas which must be coordinated is that of evaluation instrumentation. The evaluation model calls for a pre and post observations (or input--output measures) design for each activity with all subject populations. Project evaluators should plan for this. The more data collected uniformly across all centers, the more effective the coordinated evaluation will be. However, it is not necessary that the same instruments be used at all centers. Those who have individual plans for certain tests and other instruments should use them. If local districts have a basic testing program for pupils, the coordinated evaluation will draw from that program. Data collected for local evaluation efforts will, for the most part, be used for the coordinated efforts. Plans should be made to forward this data to the coordinated evaluation team.

One possibility in the coordinated evaluation design is to relate output productivity to program costs. In order to relate output variables to cost, it may be desirable to report project budgets on a program basis. This will make it possible to evaluate output variables in terms of a cost productivity continuim.

To complete the coordinated evaluation, the evaluation team will need a complete description of the program and a statement of program objectives. Since each program would be categorized by activities, we will also need a description of activities and a list of activity objectives. Plans could be made to convert the present line item budget into a program budget. Such a plan will permit the study of cost-productivity factors as outlined.

The NCTE/USOE Language/Reading Evaluation Design which follows presents a schematic diagram of the total evaluation design. Input variables are characteristics and behaviors of the people and institutions involved in the project. Those characteristics and behaviors that are subject to change as a result of project activities are identified as change variables (I). Measurement criteria are set for each change variable (III). This could be done by each center or cooperatively among centers. However, pre-test (observation) data must be collected for each change variable. Pre-condition variables are constant characteristics related to the program but not likely to change as a result of program activities (II).

Process variables are those variables which measure the extent to which the various project activities are functioning efficiently, economically, and according to plan. The particular process variables involved with each activity of the various projects will need to be identified and delineated. Major responsibility for monitoring the process variables identified will lie at the project level.

Process measures will involve both the monitoring of the process variables identified, and relating such variables to activity costs.

Output measures relate directly to those input variables identified as subject to change by the project and the criteria set for these measurements. These are the post test (observation) data. Preconditions are studies as they relate and correlate to success in the program. Output cost accountability would include the determination, if possible, of the cost of producing identified output.

The implementation of the preceeding design seems to provide the most effective and efficient means of evaluating the effectiveness of the five language/reading centers being sponsored by the NCTE/USOE joint venture. Its completion will provide rationale for the continued support of the centers whose efforts prove successful.

NATIONAL COUNCIL OF TEACHERS OF ENGLISH/U.S. OFFICE OF EDUCATION
Language/Reading Centers
Evaluation Design

Input Variables	Process Variables	Process Measures	Output Measures
I. Change variables (characteristics and behaviors that programs are attempting to change.) A. Student variables, (e.g.) reading achievement attitudes, interests, etc. B. Participant Variables (e.g.) Teacher Behavior Teacher Attitudes C. Staff Variables D. Community or Parent Variables II. Precondition Variables Constant Prerequisites, relatively fixed variables with values established in each center. (e.g.) cost of living index or educational level of teachers III. Criteria: Standards of measurement and/or definition of input variables	I. Activities of the program which attempt to alter change variables A. Student Activities B. Participant Activities C. Staff Activities Function and Duties Communication	I. Techniques for monitoring and feedback to activities II. Resources Allocation Process-Cost Accountability (A Program Budget to determine activity cost)	I. Characteristics and behaviors identified as inputs and criterian measures. (see Input Column) II. Preconditions III. Output: cost accountability by input variable change. What did it cost to gain 2 months of reading achievement?

APPENDIX B

DESIGN FORMATS FOR DATA PROCESS FORMS AND RELATED CORRESPONDENCE

NATIONAL COUNCIL OF TEACHERS OF ENGLISH/LANGUAGE READING CENTER

Teacher* Data Card Format

Column 1 Identification of Center
- 1 - Berkeley
- 2 - Chapel Hill
- 3 - Columbus
- 4 - Philadelphia
- 5 - Portland

Columns 2-5 Teacher ID Number--the last four digits of the teachers social security number.

Column 6 Sex
- Male - 1
- Female - 2

Column 7 Race
- Black - 1
- White - 2
- Other - 3

Columns 8-9 Major Teaching Assignment

1 - 1	Member of a Primary (K-3) Team 7
2 - 2	Member of an Intermediate Team (4-6) 8
3 - 3	Other (If used please explain by letter) 9
4 - 4	K - 10
5 - 5	
6 - 6	

"Teacher" is used to identify a participant or staff in the project. Those receive funding and training from project funds.

Column 10 Pre-Post Code
- Pre test 1
- Post test 2

(on post assessment card only center number and ID number and those measures used in post assessment need be shown. Use columns as designated. Skip others)

Column 11-26 Teacher Attitude Scale
- 8 subtests, two columns each

Columns 27-40 Interaction Analysis--Flanders, Taba, Gallagber, etc.
- 5 subscores, 2 columns each (please indicate by letter subscales used and how punched)

Columns 41-49 Critical Thinking Skills (Ashford-Guilford & others) (Question & Answer Scales)
- 4 subscores, 2 digits each

Recall	41-42
Analytical	43-44
Integrative	45-46
Evaluative	47-48

Columns 50-52	Inventory on Children's Literature
Columns 53-55	Test of Knowledge-Literary Structure
Columns 56-57	Semantic Differential Self-Esteem Personal Worth

NATIONAL COUNCIL OF TEACHERS OF ENGLISH/LANGUAGE READING CENTERS

STUDENT DATA CARD FORMAT

(Some assessments may be shown that are not used at your center. Do not punch those columns)

Column 1	Identification of Center 1 - Berkeley 2 - Chapel Hill 3 - Columbus 4 - Philadelphia 5 - Portland
Columns 2-6	Student ID number (a unique 5-digit number assigned by each center to each student--all data on the student should be recorded in this code reference) Berkeley: 00001 to 02000 Chapel Hill: 02001 to 04000 Columbus: 04001 to 06000 Philadelphia: 06001 to 09000 Portland: 09001 to 11000
Column 7	Sex Male - 1 Female - 2
Column 8	Race Black - 1 White - 2 Other - 3
Columns 9-10	Class Assignment Code 1 - 1 2 - 2 3 - 3 4 - 4 5 - 5 6 - 6 Member of a Primary (K-3) Team 7 Member of an Intermediate (4-6) Team 8 Other (If used please explain by letter) 9 K - 10
Columns 11-14	Teachers ID number (see columns 2-5 on Teacher Card Use Team Leader ID # for student assigned to teams
Columns 15-20	Student's Birthday 2/7/59 is coded 020759; 12/24/58 is coded 122458
Column 21	Pre-test Post-test code Pre-test 1 Post-test 2 (Note: on post-test card only ID number and those measures used on post assessment need be recorded. However, use columns as shown.)

Columns 22-25	Student Mental ability score: eg. IQ - 94 coded 0094 IQ - 107 coded 0107 Mental age 7-11 coded 0711 Mental age 10-2 coded 1002
Column 26	Code for Scoring Report Form Used for Tests *1 - Raw Score (our preference) 2 - Grade Equivalent 3 - Percentile 4 - Stanine 5 - Other (explain by letter)
Column 27	Test Used California Achievement Test - 1 ETS Coop. Test - 2 Stanford Achievement - 3 Metropolitan Achievement - 4 Iowa Test of Basic Skills - 5 Other (Explain by letter) - 6
Columns 28-30	Reading Comprehension Score or similar subscale (5.1 coded 051) (11.8 coded 118)
Columns 31-33	Vocabulary or similar subscale
Columns 34-36	Word Attack Skills (coding) or similar subscale
Columns 37-39	Spelling
Columns 40-42	Language (English) or similar subscale
Columns 43-45	Reading Attitude Score
Columns 46-48	Reading Interest Score
Columns 49-51	Listening
Columns 52-54	Oral or Speaking
Columns 55-57	Writing (Carlsen Scale)
Columns 58-60	Creativity (Torrance)
Columns 61-70	Semantic Differential Self-Esteem Personal Worth

Specs SPECIALIZED EDUCATIONAL CONSULTANT SERVICES
Box 6145 College Station, Durham, N.C. 27708

December 7, 1970

TO: NCTE Project Director

FROM: Coordinated Evaluation Team

RE: Coordinated Evaluation: Progress Report

In order to keep in closer touch with the five Centers the members of the coordinated evaluation team are apportioning responsibility. Each team member will become a liasion person with one of the centers for the national coordinated evaluation.

Hugh I. Peck Director, Research and Evaluation LINC 1006 Lamond Avenue Durham, N. C. 27701 office (919) 688-4307 home (919) 383-1802	laision for	Charlotte Houck Professor of Education Ohio State University 1945 W. High Street Columbus, Ohio office (614) 293-2050 home (614) 267-2786
Mrs. Joan Troy Research Assistant LINC 1006 Lamond Avenue Durham, N. C. 27701 office (919) 688-4307 home (919) 489-7289	laision for	Dr. Paul Pritchard Seawell Elementary School Chapel Hill, N. C. office (919) 967-4343 home (919) 929-6679
Dr. Robert A.Pittillo Professor of Education Duke University Durham, N. C. office (919) 684-3924 home (919) 489-1012	laision for	Dr. Robert B. Ruddell Professor of Education UCLA at Berkeley Berkeley, California
Dr. Richard Ray Executive Director LINC 1006 Lamond Avenue Durham, N. C. 27701 office (919) 688-8211 home (919) 929-4216	laision for	Dr. Colin Dunkeld Associate Director School of Education Portland State University P. O. Box 751 Portland, Ore.

Dr. W. G. Katzenmeyer
Professor of Education
Duke University
Durham, N. C.
office (919) 684-3924
home (919) 383-5080

laision
for

Dr. John Pepper
Project Evaluator
PIRLT
School District of Philadelphia
Philadelphia, Pa.

Each of us will try to become more familar with your project and to keep in close touch with you. Also, we will be in touch with you regarding plans for a visit to your project.

We are now at the stage that pretest data should be arriving to us. So far it has not, except for Chapel Hill.

We need to have the Teacher Practice and Attitude Survey returned to us at once. Further, the pre test data process cards for teachers and students should be in our hands before Christmas Holiday. We have sent to you the Data Card Format for Teachers and Students. If you need additional copies contact your laision.

John Peper has suggested that the following be added to the cards. Therefore, if you wish to use these variables please use the columns indicated for them. We urge that you add these to your data format sheets as follows:

Teacher Data Card Format
Column 58 = Teacher Education Level
1 = BA
2 = M. Ed.
3 = Ph.D.
Column 59-61 = Number of Days Teacher was in training as part of Project. If less than 100 use: 087
Column 62 = Socio-Economic Status of Teacher

Student Data Card Format
Column 71 = Socio-Economic Status of Student
Column 72-74 = Number of days attended school 1970-71 school year. If less than 100 use 087.

Please mail all data to us at the letterhead address as soon as possible. We are sure you realize the importance of a well coordinated evaluation and urge your support.

HIP:bb
cc: Robert T. Hogan
Doris Gunderson

APPENDIX C

TEACHER PRACTICES AND ATTITUDE SURVEY

NCTE COORDINATED EVALUATION

Prepared by

SPECS, INC.

Durham, N. C.

Copyright 1970

Teacher Practices and Attitude Survey

Part I - Directions:

1. Give the last four digits of your social security number ________. (Through this technique responses cannot be identified with the individual; your identity will be protected.)

2. Please rate your reactions on the five point scale from 1, strongly disagree, to 5, strongly agree.

	Strongly Disagree				Strongly Agree
1. Parents should participate in various phases of the reading/language arts program.	1	2	3	4	5
2. Parents should be thoroughly informed about the reading/language arts program.	1	2	3	4	5
3. The developmental reading/language arts program should be emphasized for all pupils regardless of their achievement.	1	2	3	4	5
4. Most teachers practice flexible grouping procedures.	1	2	3	4	5
5. Creative teaching is encouraged by the school administration.	1	2	3	4	5
6. Pupils have a positive attitude toward the reading specialists.	1	2	3	4	5

		Strongly Disagree								Strongly Agree
7.	Remedial reading for those pupils who are considerably below grade level should be strongly emphasized.	1	:	2	:	3	:	4	:	5
8.	If given the opportunity, most pupils will do a considerable amount of reading on their own.	1	:	2	:	3	:	4	:	5
9.	Teachers are actively involved in the planning of new programs.	1	:	2	:	3	:	4	:	5
10.	Most teachers are receptive to offers of professional help from supervisors and administrators.	1	:	2	:	3	:	4	:	5
11.	School administrators provide an atmosphere conducive to learning.	1	:	2	:	3	:	4	:	5
12.	The school system furnishes adequate instructional materials.	1	:	2	:	3	:	4	:	5
13.	Pupils handle instructional materials, books and equipment with respect.	1	:	2	:	3	:	4	:	5
14.	The school administration fully supports the work of the reading/language arts supervisors and/or specialists.	1	:	2	:	3	:	4	:	5
15.	Contemplated changes and new programs are thoroughly explained to parents.	1	:	2	:	3	:	4	:	5
16.	Parents feel that the reading/language arts program is reaching the needs of									
	(1) all pupils	1	:	2	:	3	:	4	:	5
	(2) average pupils	1	:	2	:	3	:	4	:	5
	(3) pupils below grade level	1	:	2	:	3	:	4	:	5
	(4) pupils well above grade level	1	:	2	:	3	:	4	:	5

		Strongly Disagree								Strongly Agree
17.	Most teachers make a concerted effort to individualize instruction.	1	:	2	:	3	:	4	:	5
18.	Most school leaders are knowledgeable about the reading/ language arts program.	1	:	2	:	3	:	4	:	5
19.	Adequate supplementary materials are furnished to the teachers.	1	:	2	:	3	:	4	:	5
20.	The administration encourages experimentation and innovation.	1	:	2	:	3	:	4	:	5
21.	Parents appear to be satisfied with the reading program.	1	:	2	:	3	:	4	:	5

Part II - Directions:

1. Please make a check in the appropriate column to indicate the frequency to which you used the following techniques or activities to teach reading during your past year of teaching.

		Daily	2-3 Times Weekly	2-3 Times Monthly	Never
1.	Linguistic Materials				
2.	Phonic Methods				
3.	Basal Readers				
4.	Individualized Reading				
5.	Multi-ethic books and/or materials				
6.	Reading to Students				
7.	Recreational Reading				
8.	Show 'n Tell				
9.	Student interpretation & critical response				
10.	Reading Groups				
11.	Role Playing				
12.	Creative Writing				
13.	Recordings				
14.	Tapes (audio)				
15.	Films				
16.	Pupil-Teacher Evaluation				
17.	Contemporary Prose and Poetry				
18.	Games				
19.	Group Planning				

Part II - (con't.)

		Daily	2-3 Times Weekly	2-3 Times Monthly	Never
20.	Individual Pupil Planning				
21.	Involvement of Parents in your reading program				
22.	Integration of language skills development with content areas				
23.	Field Trips				
24.	Pupils dictating stories to Teachers				
25.	Traditional prose and Poetry				
26.	Observation of other classes & programs				
27.	Parent-Teacher Evaluation Conferences				
28.	Classroom Demonstrations				
29.	Workbooks				
30.	Community Resources				
31.	Library				
32.	Teacher Aides, Clerical Assistants				
33.	Programmed Materials				
34.	Flexible Grouping Procedures				

Part III - Directions:

Please answer all of the following items. Use the back of this instrument for any additional comments you wish to make.

I. List in Rank Order the ten most effective techniques and/or activities for teaching reading.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

II. List in Rank Order your objectives for your reading program.

1.
2.
3.
4.
5.

(Con't.)

II. Con't.

6.

7.

8.

9.

10.

III. To what extent do you feel the activities involvement of parents with teachers enhances the effectiveness of the reading program for:

(a) culturally deprived students

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(b) Slow learners

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(c) average students

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(d) above average students

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

IV. How do you rate your effectiveness as a teacher of reading to:

(a) culturally deprived students

(1) low (2) moderate (3) strong (4) excellent

(b) average pupils

(1) low (2) moderate (3) strong (4) excellent

(c) above average students

(1) low (2) moderate (3) strong (4) excellent

V. What would you consider the most effective way to improve your competency in teaching reading?

VI. To what extent do non-standard dialects limit a child's ability to success in a reading program?

(a) students well below grade level

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(b) slow learners

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(c) average students

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

(d) above average students

(1) not at all (2) moderately (3) to a considerable degree (4) extensively

APPENDIX D

DIRECTORS QUESTIONNAIRE

INFORMATION FOR COORDINATED EVALUATION

Specs SPECIALIZED EDUCATIONAL CONSULTANT SERVICES
Box 6145 College Station, Durham, N.C. 27708

May 17, 1971

Directors Questionnaire: Language Arts/Reading Projects

The following requests for information are designed to assist the coordinated evaluation team in preparing its report to you and NCTE.

A. We are interested in your perception of the impact that the Language Arts/Reading Project has had on your cooperating institution (university). The following are items you may wish to include in your report:

1. Number of professors or other university staff involved (type of involvement).
2. Number of graduate students involved (type of involvement).
3. Number of undergraduates involved (type of involvement).

B. One charge that we had was to devote attention to the outreach, transfer or multiplier effect of the projects. Would you please address two or three paragraphs to this portion of your project. You may want to include the following among some of your points:

1. Number and types of visitors to the project.
2. Number of outside teachers and staff brought into the project and their level of involvement.
3. Number of teachers outside project group used in consultantships and the degree of involvement.
4. Number of times project staff presented dimensions of project to audiences.
5. Other evidence of "multiplies" effect.

C. Projects provided for different levels of parent involvement. Different groups of parents were involved at different levels. Devote two or three paragraphs to a description of this phase of your project. You may want to include the following:

1. Number of parents.
2. Evidence of parent participation.
3. Were there regular meetings. Describe.
4. What were some roles parents played in your project.

Specs SPECIALIZED EDUCATIONAL CONSULTANT SERVICES
Box 6145 College Station, Durham, N.C. 27708

May 17, 1971

TO: NCTE/OE Language Arts/Reading Project Evaluators

FROM: Coordinated Evaluation Team
Drs. Ray, Pittillo, Katzenmeyer and Peck

SUBJECT: Information for Coordinated Evaluation

At our Berkeley meeting sometime in the late and sleepy hours of our final session Bob Ruddell asked that we prepare a "reminder list" of those materials that should be or have been sent to us in order for the coordinated evaluation to be completed.

Therefore we submit the following list:

1. Pre-Test on Teacher Attitude and Practices Survey (we have these)
2. Post-Test on Teacher Attitude and Practices Survey (mailed to you on May 17, 1971)
3. Project Directors Survey (see enclosed)
4. Pre Data Cards on Project Teachers (see previous memo for card formats)
5. Post Data Cards on Project Teachers (see previous memo for card formats)
6. Pre Data Cards on Project Students (see previous memo for card format)
7. Post Data Cards on Project Students (see previous memo for card format)

cc: Robert Hogan
Doris Gunderson

Encls.

APPENDIX E

OHIO STATE PUPIL PERFORMANCE RESULTS

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71        ANALYSIS XII

GROUP    14 =       169                     OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY
                                                         Pre-Test Grade I

MEANS AND STANDARD DEVIATIONS

VARIABLE        N              MEAN  STANDARD DEVIATION           VARIANCE          SUM X**2               SUM X

RDCOM         128          7.781250            4.374114          19.132874      10180.000000          996.000000
VOCAB         128         11.226562           17.737905         314.633304      56091.000000         1437.000000
WRDAT         129          6.217054            3.581552          12.827519       6628.000000          802.000000
SPELL         129          8.364341            4.954382          24.545906      12167.000000         1079.000000
LANG          129         10.449612            4.126820          17.030644      16266.000000         1348.000000
RDATT         155        388.400000           75.736264        5735.981818   24265798.000000        60202.000000
ATTND         130        148.038461           34.874615        1216.238819    3005895.000000        19245.000000
DYSAB         129         20.837209           17.899803         320.402979      97022.000000         2688.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71      ANALYSIS XI

GROUP   13 =      166                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY

                                                 Post-Test Grade I
MEANS AND STANDARD DEVIATIONS

VARIABLE      N             MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2             SUM X

RDCOM       150         4.993333            3.388683        11.483176       5451.000000        749.000000
VOCAB       161        47.925465           17.761458       315.469409     420268.000000       7716.000000
WRDAT         0                                                                0.000000          0.000000
SPELL         0                                                                0.000000          0.000000
LANG          0                                                                0.000000          0.000000
RDATT       146       385.897260           62.300908      3881.403164   22304641.000000      56341.000000
ATTND       159       157.817610           22.548921       508.453865    4040453.000000      25093.000000
DYSAB       159        15.534591           13.091102       171.376960      65448.000000       2470.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71      ANALYSIS I
GROUP    3 =      146                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY
                                                        Pre-Test Grade II
MEANS AND STANDARD DEVIATIONS

VARIABLE        N              MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2             SUM X

RDCOM          54          7.277777            4.358538         18.996855       3867.000000         393.000000
VOCAB         130         58.907692           14.487870        209.898389     478192.000000        7658.000000
WRDAT           0                                                                   0.000000           0.000000
SPELL           0                                                                   0.000000           0.000000
LANG            0                                                                   0.000000           0.000000
RDATT         134        391.582089           80.844257       6535.793962   21416356.000000       52472.000000
ATTND         127        147.299212           34.474815       1188.512935    2905279.000000       18707.000000
DYSAB         127         12.165354           11.443972        130.964504      35297.000000        1545.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71       ANALYSIS VI
GROUP    8 =      141                  OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY
                                                   Post-Test Grade II
MEANS AND STANDARD DEVIATIONS

VARIABLE       N              MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2              SUM X

RDCOM        130          9.323076            6.079850         36.964579       16068.000000        1212.000000
VOCAB        137         69.934306           61.196910       3745.061829     1179369.000000        9581.000000
WRDAT          0                                                                   0.000000           0.000000
SPELL          0                                                                   0.000000           0.000000
LANG           0                                                                   0.000000           0.000000
RDATT        123        376.569105           64.234085       4126.017726    17945302.000000       46318.000000
ATTND        139        161.179856           23.064261        531.960170     3684484.000000       22404.000000
DYSAB        139         13.021582           12.772517        163.137211       46082.000000        1810.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/18/71       ANALYSIS II

GROUP    4 =      135                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY

MEANS AND STANDARD DEVIATIONS                        Pre-Test Grade III

VARIABLE        N              MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2              SUM X

RDCOM         128         15.101562            8.676005         75.273068       38751.000000         1933.000000

VOCAB         127         11.700787            6.966262         48.528808       23502.000000         1486.000000

WRDAT           0                                                                   0.000000            0.000000

SPELL           0                                                                   0.000000            0.000000

LANG            0                                                                   0.000000            0.000000

RDATT         122        360.278688           52.820648       2790.020864    16173282.000000        43954.000000

ATTND         121        156.652892           34.974683       1223.228512     3116143.000000        18955.000000

DYSAB         121         11.752066           11.170109        124.771349       31684.000000         1422.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71        ANALYSIS VII

GROUP    9 =      130                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY

MEANS AND STANDARD DEVIATIONS                           Post-Test Grade III

VARIABLE        N          MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2            SUM X

RDCOM         118     20.016949         10.074070      101.486889      59154.000000      2362.000000
VOCAB         127     15.173228          9.067729       82.223722      39599.000000      1927.000000
WRDAT           0                                                          0.000000         0.000000
SPELL           0                                                          0.000000         0.000000
LANG            0                                                          0.000000         0.000000
RDATT         123    363.178861         57.198680     3271.689057   16622709.000000     44671.000000
ATTND         125    164.136000         21.017789      441.747483    3422355.000000     20517.000000
DYSAB         125     10.352000          9.982449       99.649290      25752.000000      1294.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71        ANALYSIS III
GROUP    5 =      123                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY
MEANS AND STANDARD DEVIATIONS                         Pre-Test Grade IV

VARIABLE        N             MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2             SUM X

RDCOM         120        14.283333            7.647906         58.490476      31442.000000       1714.000000
VOCAB         113        14.256637            6.730499         45.299620      28041.000000       1611.000000
WRDAT           0                                                               0.000000          0.000000
SPELL           0                                                               0.000000          0.000000
LANG            0                                                               0.000000          0.000000
RDATT         117       340.213675           63.316641       4008.997052   14007249.000000      39805.000000
ATTND         113       166.566371           22.534448        507.801359    3191986.000000      18822.000000
DYSAB         113        10.566371           10.389620        107.944216      24706.000000       1194.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/18/71        ANALYSIS VIII

GROUP   10 =      117                   OHIO STATE - COLUMBUS, PRE AND POST TESTS - NCTE STUDY

MEANS AND STANDARD DEVIATIONS                         Post-Test Grade IV

VARIABLE          N              MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2             SUM X

RDCOM           113         15.743362            6.461118         41.746049      32683.000000       1779.000000
VOCAB           115         13.556521            6.828977         46.634935      26451.000000       1559.000000
WRDAT             0                                                                  0.000000          0.000000
SPELL             0                                                                  0.000000          0.000000
LANG              0                                                                  0.000000          0.000000
RDATT           109        338.715596           60.403441       3648.575773   12899426.000000      36920.000000
ATTND           116        165.146551           16.161819        261.204422    3193751.000000      19157.000000
DYSAB           116         10.827586           11.630003        135.256971      29154.000000       1256.000000
```

APPENDIX F

PHILADELPHIA PUPIL PERFORMANCE RESULTS

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER      11/19/71       ANALYSIS I
GROUP    1 =      49                    GRADE 1 PIRLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE      N         MEAN  STANDARD DEVIATION        VARIANCE         SUM X**2           SUM X

WORDM        49     5.836734          2.105023          4.431122      1882.000000      286.000000
LISTN        49     8.183673          2.619426          6.861394      3611.000000      401.000000
MATCH        49     4.448979          3.329547         11.085884      1502.000000      218.000000
ALPHA        49     7.530612          4.659676         21.712585      3821.000000      369.000000
NUMBR        49     8.653061          3.192119         10.189625      4158.000000      424.000000
COPY         49     4.489795          3.588885         12.880102      1606.000000      220.000000
TOTAL        49    38.816326         15.356423        235.819727     85148.000000     1902.000000
WORDN        49     6.877551          2.862346          8.193027      2711.000000      337.000000
LIST2        49     9.510204          2.550510          6.505102      4744.000000      466.000000
MATC2        49     9.510204          3.629293         13.171768      5064.000000      466.000000
ALPH2        49    14.857142          2.986078          8.916666     11244.000000      728.000000
NUMB2        49    13.367346          4.096206         16.778911      9561.000000      655.000000
COPY2        49     9.836734          3.472192         12.056122      5320.000000      482.000000
TOTA2        49    63.959183         14.139128        199.914965    210044.000000     3134.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71 .     ANALYSIS I

GROUP    2 =       39                  GRADES 2 THROUGH 6 PIRLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE        N            MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2              SUM X

READC          39        4.358974            7.339464         53.867746        2788.000000         170.000000
VOCAB          39       44.051282           20.412778        416.681511       91514.000000        1718.000000
AUDIS           0                                                                  0.000000           0.000000
SYLLB           0                                                                  0.000000           0.000000
BESDS           0                                                                  0.000000           0.000000
TRDAT          33       19.818181            4.253340         18.090909       13540.000000         654.000000
SDRT1           0                                                                  0.000000           0.000000
SDRT2           0                                                                  0.000000           0.000000
SSA            33        8.575757            2.669624          7.126893        2655.000000         283.000000
SSB            33        5.818181            1.424222          2.028409        1182.000000         192.000000
SSC            33        5.393939            1.818786          3.308712        1066.000000         178.000000
READD          39        5.692307            5.601474         31.376518        2456.000000         222.000000
VOCAC          38       57.684210           18.583784        345.357041      139222.000000        2192.000000
AUDIT           1                                                                324.000000          18.000000
SYLLC           1                                                                400.000000         -20.000000
BESDT           0                                                                  0.000000           0.000000
TRDAJ           0                                                                  0.000000           0.000000
SDRT3           1                                                                  4.000000           2.000000
SDRT4           0                                                                  0.000000           0.000000
SSD             0                                                                  0.000000           0.000000
SSE             1                                                                  9.000000           3.000000
SSF             1                                                                  9.000000          -3.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER         11/19/71        ANALYSIS II
GROUP     3 =       43                 GRADES 2 THROUGH 6 PIPLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE         N            MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2             SUM X

READC           35        9.942857            6.249436         39.055462        4788.000000        348.000000
VOCAB           42       64.976190           15.068118        227.048199      186629.000000       2729.000000
AUDIS            0                                                                  0.000000          0.000000
SYLLB            0                                                                  0.000000          0.000000
RESDS            0                                                                  0.000000          0.000000
TRDAT           37       21.621621            4.264526         18.186186       17952.000000        800.000000
SDRT1            0                                                                  0.000000          0.000000
SDRT2            0                                                                  0.000000          0.000000
SSA             38        9.842105            2.646020          7.001422        3940.000000        374.000000
SSB             38        6.921052            1.495607          2.236842        1903.000000        263.000000
SSC             38        5.157894            1.747992          3.055476        1124.000000        196.000000
READD           43       10.023255            6.695728         44.832779        6203.000000        431.000000
VOCAC           43       71.883720           12.410075        154.009966      228661.000000       3091.000000
AUDIT            0                                                                  0.000000          0.000000
SYLLC            0                                                                  0.000000          0.000000
RESDT            0                                                                  0.000000          0.000000
TRDAT           41       21.487804            4.533983         20.556097       19753.000000        881.000000
SDRT3            0                                                                  0.000000          0.000000
SDRT4            0                                                                  0.000000          0.000000
SSD             41        9.609756            2.700722          7.293902        4078.000000        394.000000
SSE             41        6.804878            1.676596          2.810975        2011.000000        279.000000
SSF             41        5.073170            2.137641          4.569512        1238.000000        208.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS III
GROUP     4 =       51                 GRADES 2 THROUGH 6 PIRLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE       N          MEAN  STANDARD DEVIATION        VARIANCE         SUM X**2           SUM X

READC         51     19.882352           10.754807      115.665882     25944.000000     1014.000000
VOCAB         51     14.196078            4.556400       20.760784     11316.000000      724.000000
AUDIS         51     22.215686            9.297986       86.452549     29493.000000     1133.000000
SYLLB         51      9.823529            3.793182       14.388235      5641.000000      501.000000
BESDS         51     19.411764            7.313484       53.487058     21892.000000      990.000000
TRDAT         48     21.375000            4.970658       24.707446     23092.000000     1026.000000
SDRT1         50     13.340000            5.045143       25.453469     10145.000000      667.000000
SDRT2         50     15.440000            8.818255       77.761632     15730.000000      772.000000
SSA           48     10.041666            3.457697       11.955673      5402.000000      482.000000
SSB           48      6.458333            1.761990        3.104609      2148.000000      310.000000
SSC           48      4.604166            1.921209        3.691046      1191.000000      221.000000
READD         51     22.843137           11.294906      127.574901     32991.000000     1165.000000
VOCAC         51     22.627450           19.010482      361.398431     44182.000000     1154.000000
AUDIT         46     28.217391            9.500673       90.262801     40688.000000     1298.000000
SYLLC         46     10.978260            4.509196       20.332850      6459.000000      505.000000
BESDT         45     22.333333            6.980492       48.727272     24589.000000     1005.000000
TRDAJ         49     20.387755            5.964535       35.575680     22075.000000      999.000000
SDRT3         46     14.913043            5.193269       26.970048     11444.000000      686.000000
SDRT4         46     19.478260            8.296556       68.832850     20550.000000      896.000000
SSD           49     10.183673            3.086755        9.528061      5539.000000      499.000000
SSE           49      6.571428            1.645701        2.708333      2246.000000      322.000000
SSF           49      4.367346            1.900590        3.612244      1108.000000      214.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS IV
GROUP    5 =       44                 GRADES 2 THROUGH 6 PIRLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE        N            MEAN  STANDARD DEVIATION           VARIANCE          SUM X**2              SUM X

READC          44       19.181818           11.930560         142.338266      22310.000000         844.000000
VOCAB          44       13.204545            6.838943          46.771141       9683.000000         581.000000
AUDIS          44       22.636363           14.074702         198.097251      31064.000000         996.000000
SYLLB          44        9.568181            4.082849          16.669661       4745.000000         421.000000
BESDS          43       18.465116            9.895522          97.921373      18774.000000         794.000000
TRDAT          41       22.292682            4.920588          24.212195      21344.000000         914.000000
SORT1          44       11.204545            5.471191          29.933932       6811.000000         493.000000
SORT2          44       15.909090            9.903765          98.084566      15354.000000         700.000000
SSA            41       10.439024            3.033552           9.202439       4836.000000         428.000000
SSB            41        6.317073            1.404261           1.971951       1715.000000         259.000000
SSC            41        5.365853            2.384911           5.687804       1408.000000         220.000000
READD          44       27.954545            9.086034          82.556025      37934.000000        1230.000000
VOCAC          44       19.840909            5.391393          29.067124      18571.000000         873.000000
AUDIT          44       29.204545            8.614696          74.213002      40719.000000        1285.000000
SYLLC          44       12.136363            4.370040          19.097251       7302.000000         534.000000
BESDT          43       22.790697            7.301526          53.312292      24574.000000         980.000000
TRDAT          44       23.795454            4.038071          16.306025      25615.000000        1047.000000
SORT3          44       15.750000            5.811476          33.773255      12367.000000         693.000000
SORT4          44       22.772727            8.276791          68.505285      25764.000000        1002.000000
SSD            44       12.113636            2.503213           6.428646       6819.000000         533.000000
SSE            44        6.636363            1.556545           2.422832       2042.000000         292.000000
SSF            44        5.272727            2.296241           5.272727       1450.000000         232.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71      ANALYSIS V
GROUP    5 =      24                   GRADES 2 THROUGH 6 PIRLT - PHILADELPHIA PRE AND POST TEST

MEANS AND STANDARD DEVIATIONS

VARIABLE        N             MEAN  STANDARD DEVIATION          VARIANCE         SUM X**2            SUM X

READC          24        31.458333            7.627063         58.172101     25089.000000       755.000000
VOCAB          24        19.250000            6.215338         38.630434      9782.000000       462.000000
AUDIS          24        31.750000            9.085344         82.543478     26092.000000       762.000000
SYLLB          24        13.291666            4.740933         22.476449      4757.000000       319.000000
BESDS          24        27.041666            7.189842         51.693840     18739.000000       649.000000
TRDAT          22        21.681818            5.609399         31.465367     11003.000000       477.000000
SDRT1          24        16.833333            4.715069         22.231884      7312.000000       404.000000
SDRT2          24        25.625000            9.685545         93.809782     17917.000000       615.000000
SSA            22        10.363636            3.125097          9.766233      2568.000000       228.000000
SSB            22         5.318181            2.101844          4.417748       715.000000       117.000000
SSC            22         6.045454            2.572330          6.616883       943.000000       133.000000
READD          24        32.000000           12.075847        145.826086     27930.000000       768.000000
VOCAS          24        27.375000           16.743103        280.331521     24433.000000       657.000000
AUDIT          20        37.400000            8.146035         66.357894     29236.000000       748.000000
SYLLC          20        14.950000            4.186129         17.523684      4803.000000       299.000000
BESDT          20        30.800000            4.883915         23.852631     19426.000000       616.000000
TRDAJ          24        19.833333            4.249467         18.057971      9856.000000       476.000000
SDRT3          20        17.100000            6.919841         47.884210      6758.000000       342.000000
SDRT4          20        30.600000            4.147288         17.200000     19054.000000       612.000000
SSD            24         8.916666            2.652580          7.036231      2070.000000       214.000000
SSF            24         5.458333            1.667572          2.780797       779.000000       131.000000
SSF            24         5.291666            2.274225          5.172101       791.000000       127.000000
```

APPENDIX G

BERKELEY PUPIL PERFORMANCE RESULTS

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71      ANALYSIS XIII
GROUP   15 =      32                    BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES
MEANS AND STANDARD DEVIATIONS                         PRE-TEST KINDERGARTEN

VARIABLE      N             MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2          SUM X

FTSL          0                                                                0.000000       0.000000
ETSR          0                                                                0.000000       0.000000
ETSPR         0                                                                0.000000       0.000000
MRR          23        40.782608           20.566867       422.996047      47560.000000     938.000000
FTSPW         0                                                                0.000000       0.000000
PST           0                                                                0.000000       0.000000
AVWDS        30        58.200000           19.541997       381.889655     112692.000000    1746.000000
ETSPL         0                                                                0.000000       0.000000
OLR          28       314.035714           98.996252      9800.257936    3025923.000000    8793.000000
WLRS          0                                                                0.000000       0.000000
WLRM          0                                                                0.000000       0.000000
LPIS          0                                                                0.000000       0.000000
LPINS         0                                                                0.000000       0.000000
LSIB          0                                                                0.000000       0.000000
LCIS         26        15.076923            2.992297         8.953846       6134.000000     392.000000
LCIN         26         5.923076            1.671480         2.793846        982.000000     154.000000
LCID         26         3.807692            3.098634         9.601538        617.000000      99.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71       ANALYSIS XIV

GROUP   16 =      30                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                   POST-TEST KINDERGARTEN

VARIABLE       N              MEAN  STANDARD DEVIATION          VARIANCE            SUM X**2              SUM X

FTSL           0                                                                    0.000000            0.000000
FTSP           0                                                                    0.000000            0.000000
FTSPR          0                                                                    0.000000            0.000000
MRR           26         59.923076           17.361850        301.433846       100896.000000         1558.000000
FTSPW          0                                                                    0.000000            0.000000
PSI            0                                                                    0.000000            0.000000
AVWDS         30         59.933333           11.026405        121.581609       111286.000000         1798.000000
FTSPL          0                                                                    0.000000            0.000000
OLR            0                                                                    0.000000            0.000000
WLRS           0                                                                    0.000000            0.000000
WLRM           0                                                                    0.000000            0.000000
LPIS           0                                                                    0.000000            0.000000
LPINS          0                                                                    0.000000            0.000000
LSTB           0                                                                    0.000000            0.000000
LCIS           0                                                                    0.000000            0.000000
LCIN           0                                                                    0.000000            0.000000
LCID           0                                                                    0.000000            0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71       ANALYSIS XII
GROUP   14 =      30                    BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES
                                                  PRE-TEST GRADE I
MEANS AND STANDARD DEVIATIONS

VARIABLE        N            MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2             SUM X

ETSL            0
                                                                                 0.000000           0.000000
ETSR            0
                                                                                 0.000000           0.000000
ETSPR           0
                                                                                 0.000000           0.000000
MRR            29       72.620689           12.940561        167.458128     157628.000000        2106.000000
ETSPW           0
                                                                                 0.000000           0.000000
PSI             0
                                                                                 0.000000           0.000000
AVWDS          30       65.166666           12.148742        147.591954     131681.000000        1955.000000
ETSPL           0
                                                                                 0.000000           0.000000
OLR            29      358.655172          100.623156      10125.019704    4013873.000000       10401.000000
WLRS            0
                                                                                 0.000000           0.000000
WLRM            0
                                                                                 0.000000           0.000000
LPIS            0
                                                                                 0.000000           0.000000
LPINS           0
                                                                                 0.000000           0.000000
LSIP            0
                                                                                 0.000000           0.000000
LCIS           27       16.333333            2.369680          5.615384       7349.000000         441.000000
LCIN           27        6.333333            1.664100          2.769230       1155.000000         171.000000
LCID           27        2.333333            1.732050          3.000000        225.000000          63.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS XI
GROUP   13 =       30                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES
                                                  POST-TEST GRADE I
MEANS AND STANDARD DEVIATIONS

VARIABLE        N            MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2              SUM X

ETSL            0                                                                 0.000000             0.000000
FTSR            0                                                                 0.000000             0.000000
FTSPR          27       28.740740           13.943822        194.430199       27358.000000           776.000000
MRR            27       85.555555            9.560871         91.410256      200010.000000          2310.000000
FTSPW          27       37.037037           12.70[illegible]          161.344729       41232.000000          1000.000000
PST             0                                                                 0.000000             0.000000
AVWDS          30       64.300000           11.362825        129.113793      127779.000000          1929.000000
FTSPL          26       37.423076            8.353074         69.773846       38157.000000           973.000000
OLR             0                                                                 0.000000             0.000000
WLRS            0                                                                 0.000000             0.000000
WLRM            0                                                                 0.000000             0.000000
LPIS            0                                                                 0.000000             0.000000
LPINS           0                                                                 0.000000             0.000000
LSIB            0                                                                 0.000000             0.000000
LCIS            0                                                                 0.000000             0.000000
LCIN            0                                                                 0.000000             0.000000
LCID            0                                                                 0.000000             0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS I
GROUP    3 =       30                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                     PRE-TEST GRADE II

VARIABLE       N           MEAN  STANDARD DEVIATION       VARIANCE          SUM X**2             SUM X

ETSL          25      35.760000            7.333030      53.773333      33260.000000        894.000000
ETSP          26      26.692307           12.434690     154.621538      22390.000000        694.000000
ETSPR         30      20.166666           13.618150     185.454022      17579.000000        605.000000
MR3            0                                                            0.000000          0.000000
ETSPW         30      29.233333           14.099849     198.805747      31403.000000        877.000000
PSI            0                                                            0.000000          0.000000
AVWDS         30      65.333333           11.152031     124.367816     131660.000000       1960.000000
ETSPI         30      37.366666            5.635376      31.757471      42809.000000       1121.000000
OL3           28     331.392857          121.926006   14865.951058    3476375.000000       9279.000000
WLRS          28     156.071428           72.589116    5269.179894     824300.000000       4370.000000
WLRM          27     165.185185           74.025482    5479.772079     879200.000000       4460.000000
LPIS           0                                                            0.000000          0.000000
LPINS          0                                                            0.000000          0.000000
LSIR           0                                                            0.000000          0.000000
LCIS          28      18.392857            2.698961       7.284391       9669.000000        515.000000
LCIN          28       5.285714            2.140563       4.582010        906.000000        148.000000
LCID          28       1.321428            1.362284       1.855820         99.000000         37.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER      11/19/71      ANALYSIS VI
GROUP     8 =        33                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                      POST-TEST GRADE II

VARIABLE        N              MEAN   STANDARD DEVIATION        VARIANCE         SUM X**2          SUM X

ETSL            0                                                                0.000000          0.000000
ETSR            0                                                                0.000000          0.000000
ETSPR          25         33.800000            13.047988      170.250000     32647.000000        845.000000
MRR             0                                                                0.000000          0.000000
ETSPW          25         44.040000             9.833954       96.706666     50809.000000       1101.000000
PSI             0                                                                0.000000          0.000000
AVWDS          30         66.133333            10.997596      120.947126    134716.000000       1984.000000
ETSPL          25         40.840000             6.355312       40.390000     42667.000000       1021.000000
OLR             0                                                                0.000000          0.000000
WLRS           25        230.000000            66.143782     4375.000000   1427500.000000       5750.000000
WLRM           26        231.923076            89.889675     8080.153846   1600500.000000       6030.000000
LPIS            0                                                                0.000000          0.000000
LPINS           0                                                                0.000000          0.000000
LSIB            0                                                                0.000000          0.000000
LCIS            0                                                                0.000000          0.000000
LCIN            0                                                                0.000000          0.000000
LCID            0                                                                0.000000          0.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS II
GROUP    4 =      30                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                      PRE-TEST GRADE III

VARIABLE       N             MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2             SUM X

FTSL           0                                                                  0.000000           0.000000
ETSR           0                                                                  0.000000           0.000000
ETSP2         27        30.222222           12.762123        162.871794       28896.000000         816.000000
MR3            0                                                                  0.000000           0.000000
FTSPW         25        45.840000           11.502463        132.306666       55708.000000        1146.000000
PSI           27        11.185185            7.785771         60.618233        4954.000000         302.000000
AVWDS         30        70.366666           12.369270        152.998850      152981.000000        2111.000000
FTSPL         26        32.269230            6.551687         42.924615       28147.000000         839.000000
OLR           25       399.920000           99.290785       9858.660000     4235008.000000        9998.000000
WLRS          28       236.071428          117.987421      13921.031746     1936300.000000        6610.000000
WLRM          27       248.148148          102.620924      10531.054131     1936400.000000        6700.000000
LPIS          25        25.800000            3.894440         15.166666       17005.000000         645.000000
LPINS         25         4.040000            3.899572         15.206666         773.000000         101.000000
LSIB          25         0.160000            0.472581          0.223333           6.000000           4.000000
LCIS          29        19.172413            2.479472          6.147783       10832.000000         556.000000
LCIN          29         5.241379            2.081468          4.332512         918.000000         152.000000
LCID          29         0.586206            1.052793          1.108374          41.000000          17.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71       ANALYSIS VII

GROUP     9 =      30                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                        POST-TEST GRADE III

VARIABLE      N           MEAN  STANDARD DEVIATION        VARIANCE       SUM X**2            SUM X

ETSL          0                                                          0.000000         0.000000
ETSR          0                                                          0.000000         0.000000
ETSPR        28      33.892857           11.908102      141.602910   35993.000000       949.000000
MRR           0                                                          0.000000         0.000000
ETSPW        26      50.615384            8.845685       78.246153   68566.000000      1316.000000
PSI           0                                                          0.000000         0.000000
AVWDS        30      76.433333           12.260627      150.322988  179621.000000      2293.000000
ETSPL        26      37.884615            7.072916       50.026153   38567.000000       985.000000
OL3           0                                                          0.000000         0.000000
WLRS         27     323.333333           82.741498     6846.153846 3000700.000000      8730.000000
WLRM         27     336.666666           85.304883     7276.923076 3249500.000000      9090.000000
LPIS          0                                                          0.000000         0.000000
LPINS         0                                                          0.000000         0.000000
LSIR          0                                                          0.000000         0.000000
LCIS          0                                                          0.000000         0.000000
LCIN          0                                                          0.000000         0.000000
LCID          0                                                          0.000000         0.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS XIII
GROUP   15 =        62                 BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                      PRE-TEST KINDERGARTEN

VARIABLE        N             MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2           SUM X

ETSL            0                                                                0.000000          0.000000
ETSR            0                                                                0.000000          0.000000
ETSPR           0                                                                0.000000          0.000000
MRR            61        48.360655          19.225012        369.601092     164840.000000     • 2950.000000
ETSPW           0                                                                0.000000          0.000000
PSI             0                                                                0.000000          0.000000
AVWDS           0                                                                0.000000          0.000000
ETSPI           0                                                                0.000000          0.000000
OL2             9       338.888888         101.368689      10275.611111    1115816.000000       3050.000000
WLRS            0                                                                0.000000          0.000000
WLRM            0                                                                0.000000          0.000000
LPIS            0                                                                0.000000          0.000000
LPINS           0                                                                0.000000          0.000000
LSIB            0                                                                0.000000          0.000000
LCIS           61        14.360655           3.326824         11.067759      13244.000000        876.000000
LCIN           61         6.819672           2.133136          4.550273       3110.000000        416.000000
LCID           61         3.819672           3.090351          9.550273       1463.000000        233.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71.       ANALYSIS XIV
GROUP   16 =       69                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                   POST-TEST KINDERGARTEN

VARIABLE       N              MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2             SUM X

ETSL           0                                                                0.000000          0.000000
ETSR           0                                                                0.000000          0.000000
ETSPR          0                                                                0.000000          0.000000
MRR           66         63.106060           17.599937       309.757808    282971.000000       4165.000000
ETSPW          0                                                                0.000000          0.000000
PSI            0                                                                0.000000          0.000000
AVWDS          0                                                                0.000000          0.000000
ETSPL          0                                                                0.000000          0.000000
OLR            0                                                                0.000000          0.000000
WLRS           0                                                                0.000000          0.000000
WLRM           0                                                                0.000000          0.000000
LPIS           0                                                                0.000000          0.000000
LPINS          0                                                                0.000000          0.000000
LSIR           0                                                                0.000000          0.000000
LCIS           0                                                                0.000000          0.000000
LCIN           0                                                                0.000000          0.000000
LCID           0                                                                0.000000          0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM       TRIANGLE UNIVERSITIES COMPUTATION CENTER          11/19/71         ANALYSIS XII
GROUP   14 =       89                     BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                         PRE-TEST GRADE I

VARIABLE        N              MEAN  STANDARD DEVIATION         VARIANCE           SUM X**2            SUM X

ETSL            0                                                                  0.000000         0.000000
ETSP            0                                                                  0.000000         0.000000
ETSPP           0                                                                  0.000000         0.000000
MRP            85         65.117647         16.584855        275.057422       383531.000000      5535.000000
ETSPW           0                                                                  0.000000         0.000000
PSI             0                                                                  0.000000         0.000000
AVWDS           0                                                                  0.000000         0.000000
ETSPL           0                                                                  0.000000         0.000000
OLR            12        335.666666        106.319700      11303.878787      1476408.000000      4028.000000
WLRS            0                                                                  0.000000         0.000000
WLRM            0                                                                  0.000000         0.000000
LPIS            0                                                                  0.000000         0.000000
LPINS           0                                                                  0.000000         0.000000
LSIB            0                                                                  0.000000         0.000000
LCIS           78         16.794871          3.568836         12.736596        22982.000000      1310.000000
LCIN           78          5.948717          2.167633          4.698634         3122.000000       464.000000
LCID           78          2.256410          2.844159          8.089244         1020.000000       176.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS XI
GROUP   12 =       83                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                          POST-TEST GRADE I

VARIABLE        N            MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2            SUM X

FTSL            0
                                                                                0.000000          0.000000
ETSR            0
                                                                                0.000000          0.000000
FTSPR          71       27.676056          12.533127        157.079275      65379.000000       1965.000000
MPR            71       78.746478          11.789484        138.991951     450001.000000       5591.000000
FTSPW          72       34.986111          12.175353        148.239241      98655.000000       2519.000000
PSI             0
                                                                                0.000000          0.000000
AVWDS           0
                                                                                0.000000          0.000000
FTSPI          72       33.166666           8.762918         76.788732      84654.000000       2388.000000
CLR             0
                                                                                0.000000          0.000000
WLRS            0
                                                                                0.000000          0.000000
WLRM            0
                                                                                0.000000          0.000000
LPIS            0
                                                                                0.000000          0.000000
LPINS           0
                                                                                0.000000          0.000000
LSIR            0
                                                                                0.000000          0.000000
LCIS            0
                                                                                0.000000          0.000000
LCIN            0
                                                                                0.000000          0.000000
LCIR            0
                                                                                0.000000          0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS I

GROUP     3 =       89                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

                                                  PRE-TEST GRADE II
MEANS AND STANDARD DEVIATIONS

VARIABLE        N           MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2           SUM X

FTSL           78      33.089743            7.935103       62.965867      90253.000000     2581.000000
FTSP           76      28.302631           11.945453      142.693859      71581.000000     2151.000000
FTSPR          74      23.067567           12.778761      163.296741      51297.000000     1707.000000
MRR             0                                                          0.000000        0.000000
FTSPW          73      33.780821           12.473579      155.590182      94506.000000     2466.000000
PSI             0                                                          0.000000        0.000000
AVWDS           0                                                          0.000000        0.000000
FTSPL          78      36.448717            7.370787       54.328504     107807.000000     2843.000000
OLR            14     318.571428          106.659569    11376.263736    1568720.000000     4460.000000
WLRS            0                                                          0.000000        0.000000
WLRM            0                                                          0.000000        0.000000
LPIS            0                                                          0.000000        0.000000
LPINS           0                                                          0.000000        0.000000
LSIP            0                                                          0.000000        0.000000
LCIS           80      18.087500            2.705801        7.321360      26751.000000     1447.000000
LCIN           80       5.762500            1.836643        3.373259       2923.000000      461.000000
LCID           80       1.150000            1.814847        3.293670        366.000000       92.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS VI

GROUP     B =       83                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

                                                    POST-TEST GRADE II
MEANS AND STANDARD DEVIATIONS

VARIABLE        N              MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2               SUM X

ETSL            0                                                                 0.000000            0.000000
ETSP            0                                                                 0.000000            0.000000
ETSPR          73         36.136986           11.742982       137.897640     105258.000000         2638.000000
MRR             0                                                                 0.000000            0.000000
ETSPW          78         42.782051           11.843840       140.276556     153565.000000         3337.000000
PSI             0                                                                 0.000000            0.000000
AVWDS           0                                                                 0.000000            0.000000
ETSPL          78         38.410256            7.296033        53.232101     119176.000000         2996.000000
OLR             0                                                                 0.000000            0.000000
WLPS            0                                                                 0.000000            0.000000
WLRM            0                                                                 0.000000            0.000000
LPIS            0                                                                 0.000000            0.000000
LPINS           0                                                                 0.000000            0.000000
LSIB            0                                                                 0.000000            0.000000
LCIS            0                                                                 0.0000[illegible]   0.000000
LCIN            0                                                                 0.000000            0.000000
LCID            0                                                                 0.000000            0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER      11/19/71       ANALYSIS II

GROUP    4 =      105                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                        PRE-TEST GRADE III

VARIABLE       N           MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2            SUM X

ETSL           0                                                               0.000000         0.000000
ETSR           0                                                               0.000000         0.000000
ETSPR         93      24.989247           11.948707        142.771622      71210.000000      2324.000000
MRR            0                                                               0.000000         0.000000
ETSPW         84      41.119047           11.117558        123.600114     152284.000000      3454.000000
PSI           85       9.411764            7.031043         49.435574      11682.000000       800.000000
AVWDS          0                                                               0.000000         0.000000
ETSPL         93      31.569892            7.750733         60.073866      98216.000000      2936.000000
OL3           15     381.600000           92.555620       8566.542857    2304210.000000      5724.000000
WL3S           0                                                               0.000000         0.000000
WL3M           0                                                               0.000000         0.000000
LPIS          79      25.075949            3.858962         14.891593      50837.000000      1981.000000
LPINS         79       4.860759            3.764660         14.172671       2972.000000       384.000000
LSIR          79       0.063291            0.333657          0.111327          9.000000         5.000000
LCIS          91      18.538461            2.566050          6.584615      31867.000000      1687.000000
LCIN          91       5.626373            1.906995          3.636630       3208.000000       512.000000
LCID          91       0.835164            1.593484          2.539194        292.000000        76.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER      11/19/71       ANALYSIS VII
GROUP    9 =     105                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                     POST -TEST GRADE III

VARIABLE       N            MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2              SUM X

FTSL           0
                                                                              0.000000           0.000000
FTSR           0
                                                                              0.000000           0.000000
FTSPR         84       35.023809            9.150648       83.734366     109990.000000        2942.000000
MRR            0
                                                                              0.000000           0.000000
FTSPW         93       49.784946            8.257867       68.192379     236778.000000        4630.000000
PSI            0
                                                                              0.000000           0.000000
AVWDS          0
                                                                              0.000000           0.000000
FTSPI         91       36.131868            7.189821       51.693528     123454.000000        3288.000000
OL3            0
                                                                              0.000000           0.000000
WLRS           0
                                                                              0.000000           0.000000
WLRM           0
                                                                              0.000000           0.000000
LPIS           0
                                                                              0.000000           0.000000
LPINS          0
                                                                              0.000000           0.000000
LSIB           0
                                                                              0.000000           0.000000
LCIS           0
                                                                              0.000000           0.000000
LCIN           0
                                                                              0.000000           0.000000
LCID           0
                                                                              0.000000           0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS XIII

GROUP   15 =       99                         BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                           PRE-TEST KINDERGARTEN

VARIABLE         N                MEAN  STANDARD DEVIATION            VARIANCE             SUM X**2                SUM X

ETSL             0                                                                         0.000000             0.000000
ETSP             0                                                                         0.000000             0.000000
ETSPR            0                                                                         0.000000             0.000000
MRP             84           46.285714           19.770107          390.857142        212400.000000          3888.000000
ETSPW            0                                                                         0.000000             0.000000
PSI              0                                                                         0.000000             0.000000
AVWDS           30           58.200000           19.541997          381.889655        112692.000000          1746.000000
ETSPL            0                                                                         0.000000             0.000000
OL3             37          320.081081           98.744726         9750.521021       4141739.000000         11843.000000
WL3S             0                                                                         0.000000             0.000000
WL3M             0                                                                         0.000000             0.000000
LPIS             0                                                                         0.000000             0.000000
LPINS            0                                                                         0.000000             0.000000
LSIR             0                                                                         0.000000             0.000000
LCIS            87           14.574712            3.230062           10.433306         19378.000000          1268.000000
LCIN            87            6.551724            2.038915            4.157177          4092.000000           570.000000
LCID            87            3.816091            3.074761            9.454156          2080.000000           332.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS XIV

GROUP   16 =       99                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                    POST-TEST KINDERGARTEN

VARIABLE       N              MEAN  STANDARD DEVIATION          VARIANCE            SUM X**2               SUM X

ETSL           0                                                                    0.000000            0.000000

ETSR           0                                                                    0.000000            0.000000

ETSPR          0                                                                    0.000000            0.000000

MRR           92         62.206521           17.496962        306.143693       383867.000000         5723.000000

ETSPW          0                                                                    0.000000            0.000000

PSI            0                                                                    0.000000            0.000000

AVWDS         30         59.933333           11.026405        121.581609       111286.000000         1798.000000

ETSPL          0                                                                    0.000000            0.000000

OLR            0                                                                    0.000000            0.000000

WLRS           0                                                                    0.000000            0.000000

WLRM           0                                                                    0.000000            0.000000

LPIS           0                                                                    0.000000            0.000000

LPINS          0                                                                    0.000000            0.000000

LSIR           0                                                                    0.000000            0.000000

LCIS           0                                                                    0.000000            0.000000

LCIN           0                                                                    0.000000            0.000000

LCID           0                                                                    0.000000            0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS XII

GROUP   14 =      113                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                           PRE-TEST GRADE I

VARIABLE        N            MEAN  STANDARD DEVIATION          VARIANCE          SUM X**2              SUM X

ETSL            0                                                                0.000000           0.000000
ETSR            0                                                                0.000000           0.000000
ETSPP           0                                                                0.000000           0.000000
MRR           114       67.026315           16.022915        256.733814     541159.000000        7641.000000
ETSPW           0                                                                0.000000           0.000000
PSI             0                                                                0.000000           0.000000
AVWDS          30       65.166666           12.148742        147.591954     131681.000000        1955.000000
ETSPL           0                                                                0.000000           0.000000
OLR            41      351.926829          101.529402      10308.219512    5490281.000000       14429.000000
WLRS            0                                                                0.000000           0.000000
WLRM            0                                                                0.000000           0.000000
LPIS            0                                                                0.000000           0.000000
LPINS           0                                                                0.000000           0.000000
LSIR            0                                                                0.000000           0.000000
LCIS          105       16.676190            3.297712         10.874908      30331.000000        1751.000000
LCIN          105        6.047619            2.049300          4.199633       4277.000000         635.000000
LCID          105        2.276190            2.596207          6.740293       1245.000000         239.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM  ,  TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71      ANALYSIS XI
GROUP   13 =      119                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                          POST-TEST GRADE I

VARIABLE      N            MEAN  STANDARD DEVIATION           VARIANCE         SUM X**2            SUM X

ETSL          0                                                                0.000000         0.000000
ETSR          0                                                                0.000000         0.000000
ETSPR        98       27.969387           12.872454         165.700084     92737.000000      2741.000000
MRR          98       80.622448           11.582527         134.154954    650011.000000      7901.000000
ETSPW        99       35.545454           12.290092         151.046382    139887.000000      3519.000000
PST           0                                                                0.000000         0.000000
AVWDS        30       64.300000           11.362825         129.113793    127779.000000      1929.000000
ETSPL        98       34.295918            8.817986          77.756890    122811.000000      3361.000000
OLR           0                                                                0.000000         0.000000
WLRS          0                                                                0.000000         0.000000
WLRM          0                                                                0.000000         0.000000
LPIS          0                                                                0.000000         0.000000
LPINS         0                                                                0.000000         0.000000
LSTB          0                                                                0.000000         0.000000
LCIS          0                                                                0.000000         0.000000
LCIN          0                                                                0.000000         0.000000
LCID          0                                                                0.000000         0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71        ANALYSIS I
GROUP    3 =      119                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES
                                                 PRE-TEST GRADE II
MEANS AND STANDARD DEVIATIONS

VARIABLE       N            MEAN  STANDARD DEVIATION          VARIANCE         SUM X**2              SUM X

ETSL         103       33.737864            7.842770         61.509042    123513.000000        3475.000000
ETSP         102       27.892156           12.030412        144.730828     93971.000000        2845.000000
ETSPR        104       22.230769           13.026657        169.693801     68876.000000        2312.000000
MRR            0                                                                0.000000           0.000000
ETSPW        103       32.456310           13.063777        170.662288    125909.000000        3343.000000
PSI            0                                                                0.000000           0.000000
AVWDS         30       65.333333           11.152031        124.367816    131660.000000        1960.000000
ETSPL        108       36.703703            6.919104         47.874004    150616.000000        3964.000000
OL3           42      327.119047          115.906438      13434.302555   5045095.000000       13739.000000
WLRS          28      156.071428           72.589116       5269.179894    824300.000000        4370.000000
WL3M          27      165.185185           74.025482       5479.772079    879200.000000        4460.000000
LPIS           0                                                                0.000000           0.000000
LPINS          0                                                                0.000000           0.000000
LSIR           0                                                                0.000000           0.000000
LCIS         108       18.166666            2.694750          7.261682     36420.000000        1962.000000
LCIN         108        5.638888            1.921148          3.690809      3829.000000         609.000000
LCID         108        1.194444            1.704629          2.905763       465.000000         129.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        11/19/71       ANALYSIS VI
GROUP    8 =      119                   BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                      POST-TEST GRADE II

VARIABLE         N             MEAN  STANDARD DEVIATION          VARIANCE         SUM X**2              SUM X

FTSL             0
                                                                                  0.000000           0.000000
FTSP             0
                                                                                  0.000000           0.000000
FTSPP           98        35.540816           12.063550        145.529244    137905.000000        3483.000000
MRP              0
                                                                                  0.000000           0.000000
FTSPW          103        43.087378           11.355319        128.943270    204374.000000        4438.000000
PSI              0
                                                                                  0.000000           0.000000
AVWDS           30        66.133333           10.997596        120.947126    134716.000000        1984.000000
FTSPL          103        39.000000            7.126311         50.784313    161843.000000        4017.000000
OLR              0
                                                                                  0.000000           0.000000
WLRS            25       230.000000           66.143782       4375.000000   1427500.000000        5750.000000
WLRM            26       231.923076           89.889675       8080.153846   1600500.000000        6030.000000
LPIS             0
                                                                                  0.000000           0.000000
LPINS            0
                                                                                  0.000000           0.000000
LSIB             0
                                                                                  0.000000           0.000000
LCIS             0
                                                                                  0.000000           0.000000
LCIN             0
                                                                                  0.000000           0.000000
LCID             0
                                                                                  0.000000           0.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER         11/19/71        ANALYSIS II

GROUP    4 =     135                      BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

MEANS AND STANDARD DEVIATIONS                        PRE-TEST GRADE III

VARIABLE         N                MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2              SUM X

ETSL             0                                                                  0.000000           0.000000
ETSR             0                                                                  0.000000           0.000000
ETSPR          120           26.166666           12.279198       150.778711     100106.000000        3140.000000
MRR              0                                                                  0.000000           0.000000
ETSPW          109           42.201834           11.329884       128.366292     207992.000000        4600.000000
PSI            112            9.839285            7.224275        52.190154      16636.000000        1102.000000
AVWDS           30           70.366666           12.369270       152.998850     152981.000000        2111.000000
ETSPL          119           31.722689            7.484361        56.015667     126363.000000        3775.000000
OLR             40          393.050000           96.034969      9222.715384    6539218.000000       15722.000000
WLRS            28          236.071428          117.987421     13921.031746    1936300.000000        6610.000000
WLRM            27          248.148148          102.620924     10531.054131    1936400.000000        6700.000000
LPIS           104           25.250000            3.861057        14.907766      67842.000000        2626.000000
LPINS          104            4.663461            3.794760        14.400205       3745.000000         485.000000
LSIP           104            0.086538            0.371576         0.138069         15.000000           9.000000
LCIS           120           18.691666            2.549660         6.500770      42699.000000        2243.000000
LCIN           120            5.533333            1.948640         3.797198       4126.000000         664.000000
LCID           120            0.775000            1.480758         2.192647        333.000000          93.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       11/19/71       ANALYSIS VII

GROUP     N =      135                  BERKELEY WASHINGTON SCHOOL SAMPLE ALL GRADES

                                                 POST-TEST GRADE III
MEANS AND STANDARD DEVIATIONS

VARIABLE       N             MEAN  STANDARD DEVIATION         VARIANCE          SUM X**2             SUM X

ETSL           0                                                                0.000000          0.000000

ETSR           0                                                                0.000000          0.000000

ETSPR        112        34.741071            9.866446        97.346766     145983.000000       3891.000000

MRR            0                                                                0.000000          0.000000

ETSPW        119        49.966386            8.358424        69.863267     305344.000000       5946.000000

PSI            0                                                                0.000000          0.000000

AVWDS         30        76.433333           12.260627       150.322988     179621.000000       2293.000000

ETSPI        117        36.521367            7.171060        51.424108     162021.000000       4273.000000

OL3            0                                                                0.000000          0.000000

WLRS          27       323.333333           82.741488      6846.153846    3000700.000000       8730.000000

WLRM          27       336.666666           85.304883      7276.923076    3249500.000000       9090.000000

LPIS           0                                                                0.000000          0.000000

LPINS          0                                                                0.000000          0.000000

LSIR           0                                                                0.000000          0.000000

LCIS           0                                                                0.000000          0.000000

LCIN           0                                                                0.000000          0.000000

LCID           0                                                                0.000000          0.000000
```

APPENDIX H

CHAPEL HILL PUPIL PERFORMANCE RESULTS

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TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/12/71      ANALYSIS I
GROUP    0 =      44                    MEANS GRADE 1 SEAWELL SCHOOL

MEANS AND STANDARD DEVIATIONS

VARIABLE        N              MEAN  STANDARD DEVIATION           VARIANCE         SUM X**2              SUM X

WRDG           44         17.431818            5.872275          34.483615     14853.000000         767.000000
PARME          42         16.523809            6.929041          48.011614     13436.000000         694.000000
VOC            44         20.431818            7.750161          60.065010     20951.000000         899.000000
SP             39         16.769230            6.903323          47.655870     12778.000000         654.000000
WORSS          43         18.465116            9.412121          88.588039     18382.000000         794.000000
ARITH          42         18.571428            6.782843          46.006968     16372.000000         780.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER          8/13/71      ANALYSIS I
GROUP    C =       29                  SEAWELL SCHOOL GRADE 2 ,FALL,1970

MEANS AND STANDARD DEVIATIONS

VARIABLE        N                 MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2               SUM X

WRDG           29            21.241379            6.533732           42.6896       14280.000000          616.000000
PARMF          29            21.172413            8.089097         65.433497       14832.000000          614.000000
VOC            29            30.413793           12.442775        154.822660       31160.000000          882.000000
SP             28            18.785714            4.909228         24.100529       10532.000000          526.000000
WORSS          29            21.551724            7.486111         56.041871       15039.000000          625.000000
ARITH          28            22.571428            7.564187         57.216931       15810.000000          632.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/13/71      ANALYSIS 1
GROUP    0 =      29                   MEANS GRADE 2 SEAWELL SCHOOL

MEANS AND STANDARD DEVIATIONS

VARIABLE       N              MEAN  STANDARD DEVIATION            VARIANCE            SUM X**2              SUM X

WORME         29         28.965517            9.518713           90.605911        26868.000000         840.000000
                         2.9
PARME         29         28.931034            9.834091           96.709359        26981.000000         839.000000
                         2.9
SCSOC         29         36.137931           12.822202          164.408866        42476.000000        1048.000000
                         3.6
SP            29         27.793103            7.113263           50.598522        23818.000000         806.000000
                         2.8
WORSS         29         32.034482           13.746383          188.963054        35051.000000         929.000000
                         3.2
LANG          29         30.517241            8.695732           75.615763        29125.000000         885.000000
                         3.1
ARCM          29         23.517241            5.172873           26.758620        16788.000000         682.000000
                         2.4
ARCN          29         31.137931            9.804241           96.123152        30809.000000         903.000000
```

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TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/13/71      ANALYSIS I
GROUP    0 =       42                  SEAWELL SCHOOL GRADE 3-FALL,1970

MEANS AND STANDARD DEVIATIONS

VARIABLE        N                MEAN  STANDARD DEVIATION            VARIANCE            SUM X**2               SUM X

WORME          42           30.904761           11.844128          140.283391        45866.000000         1298.000000
PARME          42           29.357142           13.116404          172.040069        43251.000000         1233.000000
SCSOC          42           31.309523           12.162493          147.926248        47237.000000         1315.000000
SP             41           29.317073           12.484868          155.871951        41474.000000         1202.000000
WORSS          42           29.738095           17.119464          293.076074        49159.000000         1249.000000
LANG           41           31.878048           14.950242          223.509756        50605.000000         1307.000000
ARCM           39           24.871794            7.827681           61.272604        26454.000000          970.000000
ARCN           41           31.243902           13.578992          184.389024        47399.000000         1281.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM    TRIANGLE UNIVERSITIES COMPUTATION CENTER       8/13/71       ANALYSIS I

GROUP    0 =      43                   MEANS GRADE 3 SEAWELL SCHOOL

MEANS AND STANDARD DEVIATIONS

VARIABLE        N               MEAN  STANDARD DEVIATION          VARIANCE           SUM X**2              SUM X

WORME          37          41.054054           14.051385        197.441441       69469.000000        1519.000000
PARME          38          39.263157           16.149109        260.793741       68230.000000        1492.000000
SCSOC          43          37.558139           12.934454        167.300110       67683.000000        1615.000000
SP             41          36.097560           13.635990        185.940243       60862.000000        1460.000000
WORSS          41          33.024390           18.899057        357.174390       59002.000000        1354.000000
LANG           37          40.540540           17.417415        303.366366       71732.000000        1500.000000
ARCM           42          37.119047           12.257804        150.253774       64029.000000        1559.000000
ARCN           41          38.804878           14.436446        208.410975       70075.000000        1591.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/13/71        ANALYSIS I

GROUP    0 =       43                     SEAWELL SCHOOL GRADE 4-FALL,1970


MEANS AND STANDARD DEVIATIONS


VARIABLE        N              MEAN  STANDARD DEVIATION            VARIANCE              SUM X**2                SUM X


WOME           43         38.488372             12.042 30          145.017718          69789.000000          1655.000000

PARME          43         39.651162             12.822754          164.423034          74511.000000          1705.000000

SP             43         39.186046             10.713266          114.774086          70849.000000          1685.000000

ARCMP          42         35.785714              8.253707           68.123693          56579.000000          1503.000000

ARCN           42         41.952380             14.670282          215.217189          82744.000000          1762.000000

ARAPP          42         42.738095             13.308826          177.124854          83977.000000          1795.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER          8/12/71        ANALYSIS I

GROUP     0 =       43                      MEANS GRADE 4 SEAWELL SCHOOL

MEANS AND STANDARD DEVIATIONS

VARIABLE          N            MEAN  STANDARD DEVIATION            VARIANCE            SUM X**2                SUM X

WOME             40       46.775000           14.374991          206.640384        95575.000000          1871.000000
PARME            39       48.230769           17.037824          290.287449       101753.000000          1881.000000
SP               39       46.102564           12.789376          163.568151        89108.000000          1798.000000
ARCMP            43       44.162790           13.295058          176.758582        91289.000000          1899.000000
ARCN    [illegible]1       45.243902           15.037919          226.139024        92973.000000          1855.000000
ARAPP            41       49.341463           16.851720          283.980487       111177.000000          2023.000000
```

```
TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/13/71       ANALYSIS I

GROUP    D =      26                   SEAWELL SCHOOL GRADE 5-FALL,1970

MEANS AND STANDARD DEVIATIONS

VARIABLE        N               MEAN  STANDARD DEVIATION           VARIANCE           SUM X**2             SUM X

HOME           26          50.730769           17.983453         323.404615       74999.000000       1319.000000
PARME          26          46.307692           18.922514         358.061538       64706.000000       1204.000000
SP             26          49.615384           17.964580         322.726153       72072.000000       1290.000000
LANG           26          45.692307           19.344806         374.221538       63638.000000       1188.000000
ARCMP          26          47.846153           20.948375         438.855384       70492.000000       1244.000000
ARCN           26          42.000000            9.042123          81.760000       47908.000000       1092.000000
ARAPP          26          48.192307           18.501933         342.321538       68943.000000       1253.000000
SOCST          26          49.115384           15.523728         240.986153       68745.000000       1277.000000
SC             26          46.307692           14.869483         221.101538       61282.000000       1204.000000
UNK            26          46.384615           13.934351         194.166153       60794.000000       1206.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM      TRIANGLE UNIVERSITIES COMPUTATION CENTER       8/12/71      ANALYSIS I

GROUP    0 =      24                          MEANS GRADE 5 SEAWELL SCHOOL


MEANS AND STANDARD DEVIATIONS

VARIABLE       N              MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2             SUM X

WOME          24         59.500000           20.510866      420.695652      94642.000000       1428.000000
PARME         24         56.666666           19.492845      379.971014      85806.000000       1360.000000
SP            24         56.291666           15.911382      253.172101      81873.000000       1351.000000
LANG          24         57.041666           21.602091      466.650362      88823.000000       1369.000000
ARCMP         24         49.166666           10.813303      116.927536      60706.000000       1180.000000
ARCN          24         54.250000           13.759581      189.326086      74988.000000       1302.000000
ARAPP         24         53.333333           16.701123      278.927536      74682.000000       1280.000000
SOCST         23         54.000000           15.710448      246.818181      72498.000000       1242.000000
SC            23         56.739130           20.311701      412.565217      83121.000000       1305.000000
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TELE-STORAGE AND RETRIEVAL SYSTEM     TRIANGLE UNIVERSITIES COMPUTATION CENTER        8/12/71      ANALYSIS I
GROUP    0 =      35                       MEANS GRADE 6 SEAWELL SCHOOL

MEANS AND STANDARD DEVIATIONS

VARIABLE      N            MEAN  STANDARD DEVIATION        VARIANCE          SUM X**2             SUM X

WOME         35       71.914285           21.865055      478.080672     197263.000000       2517.000000
PARME        35       74.257142           28.712922      824.431932     221025.000000       2599.000000
SP           35       66.685714           20.846457      434.574789     170420.000000       2334.000000
LANG         35       68.200000           26.818343      719.223529     187247.000000       2387.000000
ARCMP        35       65.314285           19.843166      393.751260     162696.000000       2286.000000
ARCN         35       65.628571           18.720994      350.475630     162665.000000       2297.000000
ARAPP        35       64.428571           23.476252      551.134453     164025.000000       2255.000000
SOCST        35       68.971428           26.789468      717.675630     190898.000000       2414.000000
SC           32       71.906250           28.123413      790.926411     189975.000000       2301.000000
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